EXAMINING TEACHING PRESENCE, SOCIAL PRESENCE, COGNITIVE PRESENCE, SATISFACTION AND LEARNING IN ONLINE AND BLENDED COURSE CONTEXTS

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ABSTRACT

EXAMINING TEACHING PRESENCE, SOCIAL PRESENCE, COGNITIVE PRESENCE, SATISFACTION AND LEARNING IN ONLINE AND BLENDED COURSE CONTEXTS

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Online and Blended learning are becoming widespread along with the changing needs of society and advances in technology. Recently, there is a growing emphasis on building learning communities in order to increase the effectiveness of these learning environments. In recent years there is one promising theory that has generated considerable interest and has been widely adopted and studied by researchers: the Community of Inquiry (CoI) framework developed by Garrison, Anderson and Archer (2000). The CoI framework, with its emphasis on critical thinking and collaboration, provides a well-structured model and set of guidelines to create effective learning communities in online and blended learning environments.

The purpose of this study was to examine the development of a CoI in online and blended learning contexts in relation to students' perceived learning and satisfaction. A graduate course delivered online and blended format was the focus of the study. The data was collected through transcript analysis of online discussion, the CoI Survey, and interviews to examine social, teaching, cognitive presence postings patterns, to explore

students' perceptions of each presence, learning and satisfaction, and to compare the differences between online and blended learning environments.

Overall, all three sources of data indicated that a CoI developed in both courses. However, the study found developmental differences in the CoI presences regarding the course format. In terms of social presence, two categories – affective communication and group cohesion – were found different. Another difference between the two course formats was on the cognitive presence categories. Overall, the transcript analysis in this study found that integration was the most frequently coded phase in both courses. However, the integration phase was found to be significantly higher in the blended course compared to the online course. Finally, the survey analysis yielded higher perceptions of each presence in both courses. However, the students in the blended course had slightly higher perceptions of each presence. The only significant difference was found on teaching presence. The study also yielded some significant relationships among presences which varied according to the course.

Keywords: Community of Inquiry, Online Learning, Blended Learning

ÖZ

ÇEVRİM-İÇİ VE HARMANLANMIŞ ÖĞRENME ORTAMLARINDA ÖĞRETİM BULUNUŞLUĞU, SOSYAL BULUNUŞLUK VE BİLİŞSEL BULUNUŞLUK İLE MEMNUNİYET VE ÖĞRENMENİN İNCELENMESİ

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Çevrim-içi ve harmanlanmış öğrenme, toplumun değişen ihtiyaçları ve teknolojideki gelişmeler beraberinde giderek yaygınlaşmaktadır. Son zamanlarda, bu öğrenme ortamlarının etkinliğinin artırılması için öğrenme toplulukları oluşturmaya yönelik artan bir ilgi var. Son yıllarda, kayda değer bir ilgi gören ve araştırmacılar tarafından yaygın bir şekilde benimsenen ve üzerinde çalışılan bir teori bulunmaktadir: Garrison, Anderson ve Archer (2000) tarafından geliştirilen Araştırmaya Dayalı Öğrenme Topluluğu Yapısı (Community of Inquiry Framework - CoI). CoI yapısı, kritik düşünme ve işbirliğine verdiği önemle, çevrim-içi ve harmanlanmış öğrenme ortamlarında etkin öğrenme toplulukları oluşturmak için iyi yapılandırılmış bir model ve bir dizi yönerge sağlar.

Bu çalışmanın amacı, öğrencilerin algıladıkları öğrenme ve memnuniyetleri ile ilişkili olarak çevrim-içi ve harmanlanmış öğrenme ortamlarında bir CoI'nin gelişimini incelemektir. Hem çevrim-içi hem harmanlanmış olarak verilen bir lisansüstü ders bu çalışmanın odağı olmuştur. Sosyal, öğretimsel ve bilişsel bulunuşluk dağılımlarını incelemek; öğrencilerin her bir bulunuşluğa, memnuniyetlerine ve öğrenmerine yönelik algı düzeylerini ortaya çıkarmak ve bu açılardan çevrim-içi ve harmanlanmış öğrenme

arasındaki farkları karşılaştırmak amacı ile çevrim-içi tartışmaların içerik analizi, CoI anketi ve mülakat aracılığıyla veriler toplanmıştır.

Genel olarak bütün veriler her iki öğrenme ortamında da bir CoI'nin oluştuğunu göstermektedir. Fakat, çalışma ders formatına bağlı olarak CoI bulunuşluklarında gelişimsel farklılıklar ortaya çıkarmıştır. Sosyal bulunuşluk açısından, duyuşsal iletişim ve grup kohezyonu kategorileri farklılık göstermiştir. İki ders formatı arasındaki diğer bir fark da bilişsel bulunuşluk kategorilerinde ortaya çıkmıştır. Genel olarak, bu çalışmadaki içerik analizinde, bütünleştirme aşaması her iki derste de en sık kodlanan asama olmuştur. Fakar, bütünleştirme aşaması harmanlanmış ortamda çevrim-içi ortama kıyasla anlamlı şekilde daha yüksek bulunmuştur. Son olarak anket analizi her iki öğrenme ortamında da her bir bulunuşluğa dair yüksek algılama düzeyi ortaya çıkarmıstır. Fakat harmanlanmış derste öğrencilerin her bir bulunuşluğu algılama düzeyleri daha yüksektir. Tek anlamlı fark ise öğretimsel bulunuşlukta ortaya çıkmıştır. Çalışma aynı zamanda bulunuşluklar arasında ders formatına göre değişen anlamlı ilişkiler bulmuştur.

Anahtar Kelimeler: Araştırmaya Dayalı Öğrenme Topluluğu, Çevrim-içi Öğrenme, Harmanlanmış Öğrenme

To All Great Teachers,

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CHAPTER 1

INTRODUCTION

1.1 Introduction

This chapter provides a general background of the study starting with the value of community building in online and blended learning environments, and briefly introducing the community of inquiry framework developed by Garrison, Anderson, and Archer (2000). In addition the purpose of the study was explained and the significance was established based on the previous research and literature. Finally, the research questions and the definitions of key terms are provided at the end of this chapter.

Online and Blended learning are becoming widespread along with the changing needs of society and advances in technology. The number of programs given fully online or blended is increasing in the fields of K-12, higher education and business contexts. However, as Garrison (2003) indicated, the educational process is far too complex to shape an effective learning experience by simply providing access to more information or free discussions or chats. Learning and teaching in these learning environments have their own challenges that need to be addressed. Therefore, the instructional design of these learning environments is crucial to ensure effective teaching and learning.

The quality of these learning environments depends on the design of and the students' engagement in the learning environment (Duffy & Kirkley, 2004). Poorly designed learning environments often result in unsuccessful or unsatisfactory educational experiences. Recently, there is a growing emphasis on building learning communities in order to provide student participation and foster learning (e.g. Wenger, 1998; Palloff & Pratt, 2005; Barab, Kling & Gray, 2004). In recent years there is one promising theory that has generated considerable interest and has been widely adopted and studied by

researchers (Garrison & Arbaugh, 2007; Arbaugh, 2008, Arbaugh, Cleveland-Innes, Diaz, Garrison, Ice, Richardson & Swan, 2008). That is the Community of Inquiry (CoI) framework developed by Garrison, Anderson and Archer (2000). Learning in an educational context is socially situated which demonstrates the essential importance of interaction and community to encourage the development of cognitive and metacognitive knowledge and strategies (Garrison, 2003). The CoI framework, with its emphasis on critical thinking and collaboration, provides a well-structured model and set of guidelines to create effective learning communities in online and blended learning environments.

This study is an attempt to illuminate the development of a community of inquiry in an online and blended learning environment in relation to learning and satisfaction.

1.2 Background of the Study

Interaction is a key factor for learning and is an important component of a successful instructional program. Whether learners are interacting face-to-face or at a distance, their success may be a result of well-designed instructional strategies that take into consideration the factors that will promote interaction and enhance users' perceptions of learning and their satisfaction of their learning environment. According to Wenger (1998), learning is a social participation which refers "*not just to local events of engagement in certain activities with certain people, but to a more encompassing process of being active participants in the practices of social communities and constructing identities in relation to these communities" (p.4).*

Online learning has been promoted for providing cost effectiveness, convenience and flexibility compared to traditional learning environments. However, as with any learning environments, online learning environments also have some challenges and disadvantages. As one of the main challenges, online learning programs often suffer from limited interaction. Lack of a sense of community or feelings of isolation were often reported by students as challenges of online learning (e.g. Hara & Kling, 2001; Song, Singleton, Hill and Koh, 2004). Stodel, Thompson and MacDonald (2006) investigated learner's perceptions of what was missing in online learning and found that the aspects of what online learners miss about face-to-face learning relate to deficiencies in presence. It is expected that building an online community may reverse feelings of isolation by establishing social connectedness among students and instructors (Rovai,

2002). Blended learning, on the other hand, is advocated by many as a promising approach in order to overcome weaknesses of online and face-to-face learning and combine the benefits of each. Blended learning is believed to provide a harmonious balance between online access to knowledge and face-to-face human interaction (Osguthorpe & Grahamn, 2003). Garrison and Kanuka (2004) also assert that blended learning is particularly effective to facilitate a community of inquiry by adding an important reflective element with multiple forms of communication to meet specific learning requirements. However, the challenge lies in the advantage of blended learning; to achieve all these opportunities, designing, facilitating and supporting blended learning experiences are crucial (Hoffman, 2006). As Garrison and Vaughan (2008) described designing an effective blended learning needs a thoughtful fusion of face-to-face and online parts in order to support and complement each other for the purpose of building an effective community.

A community is defined as "*a general sense of connection, belonging and comfort that develops over time among members of a group who share purpose and commitment to a common goal*" (Conrad, 2005, p.1). There is no doubt that creating and sustaining a community for online learning is valuable as it enhances student satisfaction and learning through community involvement (Palloff & Pratt, 2005). Empirical research also confirms the relationship between sense of community and students' satisfaction and learning (e.g. Rovai, 2002; Ertmer & Stepich, 2004; Shea, 2006; Shea, Li, & Pickett, 2006; Liu, Magjuka, Bonk & Lee, 2007; Harvey, Moller, Huett, Godshalk & Downs, 2007). Weller (2007) provides a different explanation about the value of online communities such that online communities satisfy three major characteristics of internet developments – openness, decentralization and robustness – which are identified as the determinant of successful internet applications. Therefore, Weller claims that building communities will be a key feature in educational practice almost regardless of the efforts of educators to promote or resist them. Shea (2006) also explains why community building is a goal for higher-education online learning environments for three related reasons: a philosophical shift from objectivism towards constructivism; a theoretical shift from behaviorism towards socio-cognitive views of education; and a pedagogical shift from direct instruction to the facilitation of collaborative learning.

In a well developed learning community, students learn from their interactions with others, with objects of the effort and from their own participation during the process (Riel & Polin, 2004). Online learning communities allow the perspectives that the participants hold to be educationally worthwhile, exciting and provocative (Shea, 2006; Shea et al., 2006). However, it is not an easy process to create a learning community unless it is planned and opportunities for interaction are specifically built into the online or blended course (Colachico, 2007). The challenge for the educators is that clear directions based on empirical studies of community development that will guide practice in the design of effective learning environments are lacking (Carabajal, Lapointe & Gunawardena, 2003) and there is not any accepted set of rules or strategies (Lock, 2002; Arbaugh, 2007).

This study used the Community of Inquiry framework developed by Garrison, Anderson and Archer (2000) as a theoretical lens. The framework provides a well-structured model and set of guidelines to create effective learning communities in online and blended learning environments (Garrison & Anderson, 2003; Garrison & Vaughan, 2008). The Community of Inquiry represents an attempt to increase the quality of online and blended learning through collaborative knowledge construction. The assumption of the framework is that a worthwhile educational experience occurs within the community through the interaction of three core elements: teaching presence, social presence and cognitive presence. The underlying foundational perspective of the framework is a collaborative constructivist view of teaching and learning (Garrison & Anderson, 2003). Collaborative constructivism is in essence the recognition of the interplay between individual meaning and socially redeeming knowledge (Garrison & Archer, 2007). A recent study has also confirmed that epistemic engagement in collaborative knowledge building is well articulated and extended through the CoI framework (Shea & Bidjerano, 2009).

1.3 Purpose of the Study

The main purpose of this research was to examine the development of social presence, teaching presence, and cognitive presence and students' perceptions of each presence in online and blended learning environments. This research had three goals: First, posting patterns of social presence, teaching presence and cognitive presence in online discussions were explored. Second, students' perceived levels of social presence,

teaching presence, cognitive presence, satisfaction and learning were explored. Third, the relationships among three variables and perceived learning and satisfaction were investigated. Finally the results of online and blended learning environments were compared in order to explore whether there were any differences among these factors depending on the nature of learning environments.

1.4 Significance of the study

The three elements of the Community of Inquiry framework developed by Garrison, Anderson and Archer (2000) have been studied and confirmed through many research studies. However, to date there are few studies that examine the three elements of the framework simultaneously, either qualitatively or quantitatively (Swan, Garrison, & Richardson, 2009; Arbaugh, 2007; Garrison & Arbaugh, 2007). As Swan et al. (in press) indicated theoretical strength lies in the dynamics of the whole community, hence, better understanding of evolving interactions among the CoI presences and their respective categories is needed. This study examined all three elements of the framework –social, teaching and cognitive presence – concurrently.

The other contribution of this research to the Community of Inquiry framework will be the examination of the development of each element (social presence, teaching presence and cognitive presence) in two different learning environments. Previous studies examined the impact of time on the development of the CoI elements. For example Stein, Wanstreet, Glazer, Engle, Harris, Johnston, et al. (2007) examined cognitive presence over time by comparing the differences between two chat postings. Two recent studies expanded the scope by focusing on all three elements of the CoI over a nine week period in an online course (Akyol & Garrison, 2008) and in two courses offered over two different time periods (Akyol, Vaughan & Garrison, in press). This study aims to broaden current knowledge base by exploring how course design affects the development of a community of inquiry.

In order to improve our understanding of how to use online or blended learning environments to foster learning; it is important to examine the learning experience from multiple perspectives. Gunawardena, Carabajal and Lowe (2001) suggest using multiple methods and multiple sources of data to understand the complex nature of online learning. This study aimed to provide a comprehensive view of the development of a

community of inquiry in relation to learning and satisfaction in online and blended course contexts by examining the factors using both qualitative and quantitative methodologies, obtaining data from a variety of sources.

There are many studies that examined either online or blended learning environments or that compared online or face-to-face learning in the literature. However, few studies have investigated how online and blended learning environments differ in terms of students' learning and satisfaction. This study will contribute to the literature by illuminating and comparing online and blended learning environmental differences in the development of a community of inquiry as well as learning and satisfaction. The findings of this study could be used to help instructors and course designers gain a better understanding of how to facilitate and support the development of a community of inquiry.

1.5 Research Questions

The general question guiding this study is: "What are the social, teaching and cognitive presence posting patterns and student perception differences between online and blended course contexts?" The specific research questions are:

- What are the posting patterns of social, teaching and cognitive presence in online and blended course contexts?
- What are the differences on posting patterns of social, teaching and cognitive presence between online and blended course contexts?
- What are the students' perceptions of social, teaching and cognitive presence and learning and satisfaction in online and blended course contexts?
- What are the relationships among students' perceived levels of social presence, teaching presence and cognitive presence, overall satisfaction and perceived learning?
- What other factors do students identify regarding social, teaching and cognitive presence, satisfaction and learning in online and blended course contexts?

1.6 Definition of Terms

Online Learning is a method of learning delivered by using asynchronous and synchronous communication technologies.

Blended learning is the thoughtful fusion of face-to-face and online learning experiences (Garrison and Vaughan, 2008).

Social Presence is the ability of learners to project themselves socially and affectively into a community of inquiry (Rourke, Anderson, Garrison, & Archer, 2001a). Social presence has been defined recently by Garrison (in press) as "the ability of participants to identify with the community (e.g., course of study), communicate purposefully in a trusting environment, and develop inter-personal relationships by way of projecting their individual personalities."

Teaching Presence is the design, facilitation, and direction of cognitive and social processes for the purpose of realizing personally meaningful and educationally worthwhile learning outcomes. Teaching presence begins before the course commences as the teacher, acting as instructional designer, plans and prepares the course of studies, and it continues during the course, as the instructor facilitates the discourse and provides direct instruction when required (Anderson, Rourke, Garrison, & Archer, 2001).

Cognitive Presence is the extent to which learners are able to construct and confirm meaning through sustained reflection and discourse (Garrison, Anderson and Archer, 2001).

Satisfaction is an affective outcome indicating positive feelings and attitudes towards the quality of learning and learning environment.

Perceived Learning is self evaluation of the amount of learning that students gained.

CHAPTER 2

LITERATURE REVIEW

2.1 Introduction

This chapter provides literature review on the theoretical framework, the community of inquiry framework (Garrison, et al., 2000) and research related to the three elements of the framework: social presence, teaching presence and cognitive presence. Then the previous research on students' satisfaction and perceived learning in online and blended learning environments are effects of community of inquiry presences on satisfaction and learning are explored.

2.2 Community of Inquiry Framework

The Community of Inquiry Framework (CoI) was first introduced by Garrison, Anderson and Archer in 2000. Since then, many studies have used the framework as a theoretical lens and as a research tool. Arbaugh et al. (2008) found over 350 citations of the framework through Google Scholar search engine, indicating that the framework is becoming increasingly influential for explaining and prescribing the effective conduct of learning in online and blended learning environments. Perhaps one reason why the CoI framework has been accepted and adopted widely is its emphasis on collaborative-constructivist approaches which are consistent with the learner-centered paradigm.

The underlying foundational perspective of the framework is a collaborative constructivist view of teaching and learning (Garrison & Anderson, 2003). Collaborative constructivism is in essence the recognition of the interplay between individual meaning and socially redeeming knowledge; hence a community of inquiry is a personal and public search for meaning and understanding (Cleveland-Innes, Garrison & Kinsel, 2007). As shown in Figure 1, a worthwhile educational experience is embedded within a community of inquiry that is composed of teachers and students – the key participants

in the educational process. The framework assumes that learning occurs within the community through the interaction of three core elements: teaching presence, social presence and cognitive presence. In short, the CoI framework is a dynamic model of these core elements necessary for both the development of community and the pursuit of inquiry in an educational environment (Swan, Garrison & Richardson, 2009).

A recent study conducted by Shea and Bidjerano (2009) concluded that the epistemic engagement approach which foregrounds the role of learners as collaborative knowledge builders is more fully articulated and extended through the community of inquiry model. The authors further explain that through the skillful marshalling of teaching and social presence, participants are able to engage in reflection and dialogue that provides opportunities to extend current understandings.

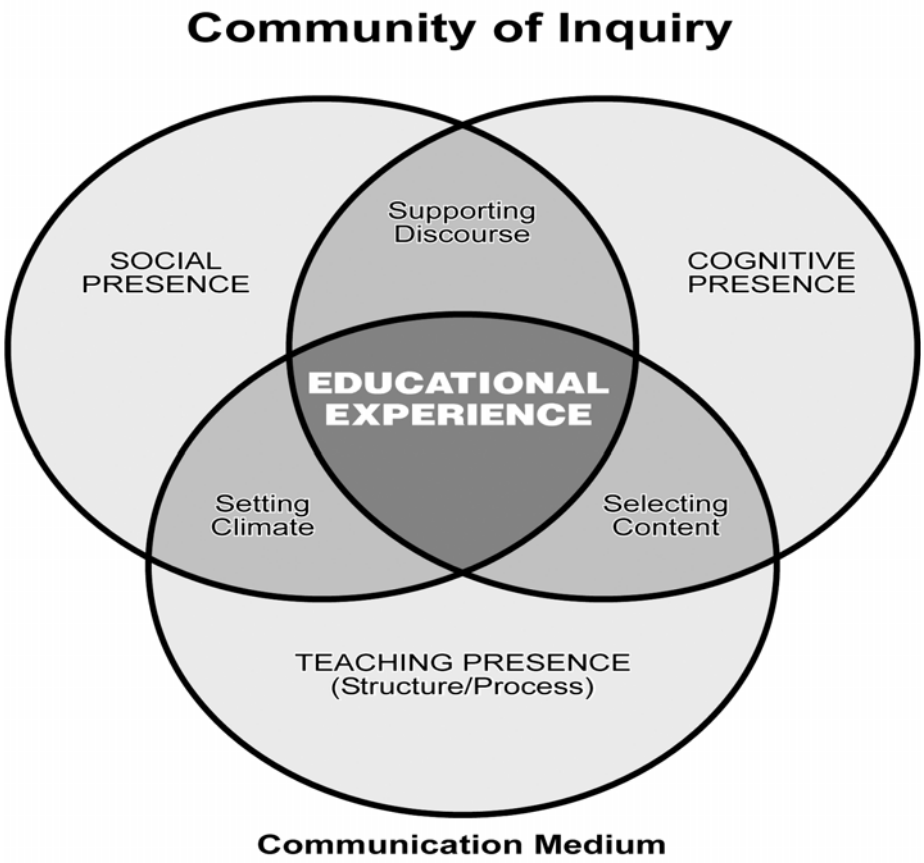

Figure 1 Community of Inquiry Framework

The first element of the framework is the development of cognitive presence, which Garrison et al. (2001) defines as "the extent to which the participants in any particular configuration of a community of inquiry are able to construct meaning through sustained communication." Cognitive presence concerns the process of both reflection and discourse in the initiation, construction and confirmation of meaningful learning outcomes. Therefore, if a deep and meaningful learning outcome is the goal of an educational experience, then an understanding of cognitive presence is a priority (Garrison, 2003). Teaching presence includes designing and managing learning sequences, providing subject matter expertise, and facilitating active learning. Social presence is defined as the ability of learners to project themselves socially and emotionally in a community of inquiry. The function of this element is to support the cognitive and affective objectives of learning. Social presence supports cognitive objectives through its ability to instigate, sustain, and support critical thinking in a community of learners.

All the presences were defined as multi-dimensional elements. Each of the presences is operationally defined in terms of the constituting categories. Social presence was defined in terms of affective expression, open communication and group cohesion. Cognitive presence was defined by the practical inquiry model and consisted of the phases – triggering event, exploration, integration, and resolution. Teaching presence was defined in terms of design, facilitation and direct instruction.

2.2.1 Social Presence

Social presence has received increasing attention and has emerged as one of the current trends in online learning research (Gunawardena & McIsaac, 2003). Sense of isolation or lack of sense of belonging to a group results in online learning research have led researchers and educators to investigate how to create and support social presence in learning contexts when there is no face-to-face interaction. Social presence is defined as "the degree of salience of the other person in the interaction and the consequent salience of the interpersonal relationships" by Short, Williams and Christie (1976, p. 65). Tu and McIsaac (2002) define social presence as "a measure of the feelings of community that a learner experiences in an online environment." Two concepts immediacy and intimacy are associated with social presence in the literature (Short et al, 1976). Immediacy is a measure of the physiological distance, which a communicator

puts between himself or herself and the object of his/her communication. Intimacy is a function of physical proximity, eye contact, topic of conversation. Both immediacy and intimacy enhances social presence. Short et al. (1976) also argue that the communication medium in terms of its capacity to transmit information about facial expression, direction of looking, posture, dress and non-verbal vocal cues, all contribute to intimacy and consequently social presence. They compared the social presence of different media including face-to-face, television, multi-speaker audio system, telephone, and business letters. The results showed that the levels of social presence in visual media were much higher than those in non-visual media. The social presence of face-to face communication was the highest, whereas business letters were the lowest. According to the authors, "the absence of visual channels reduces the possibilities for expression of socio-emotional material and decreases the information available about the other's self-image, attitudes, moods, and reactions" (p. 59).

The role of the communication medium to develop and support social presence has continued to be a source of study. For example, Lomicka and Lord (2007) investigated changes in social presence in conjunction with the technological tools used among three groups of journalers: *traditional* in which students wrote their journal entries and submitted to professor for credit but not for feedback; *dialogue* in which students used e-mail to send their journal entry to their partner; and *group* in which students used electronic discussion board to post and respond to journal entries. The authors found that the different group dynamics and interaction media impacted the development of social presence. They state that the use of these devices assist e-mail dialogue and online group discussion groups in establishing their respective communities and strengthening their group dynamics.

On the other hand, Rogers and Lea (2005) criticizes this basic tenet that media low in social presence were seen as less social which leads to the conclusion that for computer-mediated, or virtual environments, to afford social presence, one must maximize the number of visual and audio clues, thus attempting to emulate face-to-face communication. The authors provide SIDE (Social Identity model of De-individuation Effects) approach which presents a counter-argument that lack of non-verbal cues in computer-mediated environments may in fact increase, rather than decrease social presence in group context. The model assumes that a sense of belongingness to the

group, or perceptual immersion in the group, can be realized through the creation of a shared social identity between group members and the shared purpose and collaboration can create a shared social identity. The authors also tested the SIDE model empirically in various contexts, including computer-conferencing and video-conferencing and found evidence for their argument. The study of Nippard and Murphy (2007) also provided somewhat opposing results in that teachers and students preferred different tools. Students relied on a direct messaging tool (low media), while teachers relied on the use of the two-way audio component (high media). The authors indicated that a direct messaging tool offered students "a comfortable, natural and convenient means to immediately and spontaneously express a range of emotions and interact with individuals or the whole group."

In the CoI framework, social presence is defined as the ability of learners to project themselves socially and affectively into a community of inquiry (Garrison et al., 2001). Recently, Garrison (in press) updated the definition of social presence as "the ability of participants to identify with the community (e.g., course of study), communicate purposefully in a trusting environment, and develop inter-personal relationships by way of projecting their individual personalities." While consistent with previous definitions, it attempted to bring it in line with the findings of Rogers and Lea (2005).

Social presence is an important antecedent to collaboration and critical discourse by supporting cognitive objectives through its ability to instigate, sustain, and support critical thinking in a community of learners (Garrison & Anderson, 2003). In the community of inquiry framework, teachers and learners participate in a learning transaction that is more readily identified with constructivist rather than instructivist orientations. Therefore, in the CoI framework, social presence is regarded as a function of both learners and teachers (Rourke, Anderson, Garrison, & Archer, 2001a). Rourke et al. (2001a) identified 12 indicators of social presence in three categories based on previous research, literature, and analysis of transcripts:

Affective responses:

- Expression of emotions,
- Use of humor,

- Self-disclosure.

Open communication:

- Continuing a thread,
- Quoting from other's messages,
- Referring explicitly to each other's messages,
- Asking questions,
- Complimenting/expressing appreciation,
- Expressing agreement.

Cohesive responses:

- Vocatives,
- Referring to group using inclusive pronouns (e.g. we, us),
- Phatics/salutations.

Affective responses are a tacit recognition of a reciprocal relationship with the community; they facilitate conditions for engagement in meaningful dialogue and an educational experience. Open communication has also an affective quality that reflects a climate of trust and acceptance. Open communication develops through a process recognizing, complimenting, and responding to the contributions of others, which in turn encourages participation and interaction. Group cohesion is built through affective and open communication. It is essential to sustain the commitment and purpose of a community of inquiry (Garrison & Anderson, 2003). Apart from the indicators listed above, Delfino and Manca (2007) also suggested that the use of figurative language should be taken as a textual indicator of social presence and as a detector of emotions and feelings involved in an online learning experience. The authors conducted a study about expression of social presence through the use of figurative language. Their analysis of online discussions showed that figurative language was a means through which participants projected themselves (i.e., their identity, emotions, feelings), as well as being their way of conceptualizing the online learning environment.

Social presence was expected to impact learning and studies confirmed this expectation by documenting a relationship between social presence and learning (Gunawardena & Zittle, 1997; Picciano, 2002; Tu & McIsaac, 2002; Richardson & Swan, 2003; Swan & Shih, 2005). Tu (2000) examined the relationship between social presence and the social learning theory. He emphasized social interaction as fundamental to the explanation of this relationship. According to the author, social interaction on computer-mediated communication is affected by social presence. Learners must acknowledge and value the other person's social presence, otherwise social interaction is absent and social learning will not occur. Based on the elements of social learning theory, Tu also linked social presence to course design and distinguished three dimensions of course design which influenced the development of social presence: social context, online communication and interactivity. Swan and Shih (2005) provided support for this argument revealing significant differences in perceived social presence between courses which differed in terms of instructional design in supporting the development of social presence. The authors emphasized the importance of instructional design in supporting the development of social presence. Digression from curriculum was also found to foster the communication of affective, cohesive and interactive responses (Nippard & Murphy, 2007) which may influence the course design. Finally, other studies found a relationship between social presence and satisfaction with the instructor (Richardson & Swan, 2003), between social presence and privacy (Tu & McIsaac, 2002), between social presence and online interaction (Tu and McIsaac, 2002) and between social presence and teaching presence (Garrison, Anderson & Archer, 2001).

The literature indicates that social presence was measured mostly through questionnaires (e.g. Gunawardena & Zittle, 1997; Picciano, 2002; Richardson & Swan, 2003; Tu, 2002). Tu (2002) developed and validated an instrument, the Social Presence and Privacy Questionnaire (SPPQ) to measure the underlying dimensions of social presence. In his research, three dimensions appeared to be particularly important in measuring social presence: (a) social context, (b) online communication, and (c) interactivity. In the community of inquiry survey, social presence is measured through nine items (Swan, Shea, Richardson, Ice, Garrison et al., 2008; Arbaugh et al., 2008). The other methodological strategy applied by researchers to explore social presence is content analysis of computer-mediated discussions. The social presence categories and indicators developed by Rourke et al. (2001a) have been used as a tool in many studies

to explore the social presence (e.g. Swan, 2002; Lomicka & Lord, 2007; Nippard & Murphy, 2007; Akyol & Garrison, 2008).

In summary, compared to the other two presences, social presence has been the primary focus of study in online learning. Researchers have examined social presence from a variety of perspective such as expression of social presence or its impacts on learning or satisfaction. Social presence is an essential element to create online communities of inquiry. As Garrison and Arbaugh (2007) indicated, care must be taken to encourage social interaction and to provide structure and support early on.

2.2.2 Teaching Presence

Whether in an online or face-to-face learning environment, it is the teachers who are gatekeepers of classroom activity (Donaldson & Knupfer, 2002) and interaction with the instructor is critical in online or conventional learning environments. Therefore, teaching presence is another critical issue gaining importance related to the success of online teaching and learning.

Anderson (2004) defines three sets of qualities that define an excellent online learning teacher. First, he states that an excellent e-teacher is an excellent teacher. As a second set of skills, Anderson proposes having sufficient technical skills to navigate and contribute effectively within the online learning context. Finally, he asserts that an effective online learning teacher must have resilience, innovativeness, and perseverance. He also emphasizes developing a sense of trust and safety so that learners will not feel uncomfortable and constrained in postings their thoughts and comments. Similarly, Perry and Margaret (2005) investigated what makes some online educators more effective than others in their study by applying narrative inquiry. The authors used the CoI framework for their analysis. The major themes that emerged were that exemplary online educators were seen as challengers, affirmers, and influencers (Perry & Margaret, 2005). Students' responses revealed the critical role of teaching presence on cognitive presence and social presence. For example, with regard to online educators as challengers, students provided examples of how instructors challenged the student to think critically, provide additional examples from practice, and improve the quality of their assignment.

Anderson et al. (2001) define *teaching presence* as the design, facilitation, and direction of cognitive and social processes for the purpose of realizing personally meaningful and educationally worthwhile learning outcomes. For the purpose of realizing personally meaningful and educationally worthwhile learning outcomes, teaching presence forms as the moderator of the community, plans, designs, and manages the course (Garrison, Anderson, & Archer, 2001). Teaching presence begins before the course commences when the teacher, acting as instructional designer, plans and prepares the course of studies, and teaching presence continues during the course in the form of facilitating discourse and providing direct instruction when required. Anderson et al. (2001) developed a framework to describe each category of teaching presence as well as the indicators used to measure the extent to which each category of teaching presence is represented in the transcripts of an online course. The indicators for each category are as follows:

Instructional Design and organization

- Setting curriculum
- Designing methods
- Establishing time parameters
- Utilizing medium effectively
- Establishing the netiquette

Facilitating discourse

- Identifying areas of agreement/disagreement
- Seeking to reach consensus/understanding
- Encouraging, acknowledging, or reinforcing student contributions.
- Setting climate for learning
- Drawing in participants, prompting discussions
- Assess the efficacy of the process

Direct Instruction

- Present content/questions
- Focus the discussion on specific issues
- Summarize the discussions

- Confirm understanding through assessment and explanatory feedback
- Diagnose misconceptions
- Inject knowledge from diverse sources, e.g., textbook, articles, internet, personal experiences
- Responding to technical concerns

These three characteristics represented in the framework were later confirmed by Shea et al. (2003) and Arbaugh and Hwang (2006). The activities in the *design and organization* category of teaching presence include building curriculum materials, re-purposing materials and designing and administering group and individual learning activities. These activities mostly take place before the course starts and they are extensive and time consuming. *Facilitating discourse* is critical to maintaining the interest, motivation and engagement. It enables and encourages the construction of personal meaning as well as shaping and confirming mutual understanding. Anderson et al. (2001) use 'discourse' instead of 'discussion' to highlight the focused and sustained deliberation that marks learning in a community of inquiry. Facilitation of discourse stimulates social processes with a direct goal of stimulating individual and group learning. *Direct instruction* goes beyond that of a facilitating role providing intellectual and scholarly leadership and sharing subject matter knowledge with students. The potential of direct instruction challenges the 'guide on the side' concept suggesting an artificial separation of facilitator and content expert. According to Garrison and Anderson (2003), teaching presence "is not possible without the expertise of an experienced and responsible teacher who can identify the ideas and concepts worthy of study, provide the conceptual order, organize learning activities, guide the discourse and offer additional sources of information, and diagnose misconceptions and interject when required" (p.71).

Teaching presence has a regulatory and mediating role which brings "all the elements of a community of inquiry together in a balanced and functional relationship congruent with the intended outcomes and the needs and capabilities of the learners" (Garrison & Anderson, 2003, p. 29). Shea et al. (2006) argue that productive teaching presence supports the development of higher levels of community among online learners such that goal directed collaborative interaction and active learning can be effectively orchestrated by the three elements of teaching presences.

Anderson et al. (2001) used the above framework to represent teaching presence in the transcripts of an online course. The authors found in their study and observed in other online courses that the students are performing a substantial part of the teaching presence role. This is why the authors preferred using the term 'teaching', instead of 'teacher', which emphasizes the possibility of distributing the responsibilities and roles of a teacher among participants. Palloff and Pratt (2001) also state that the online instructor must be willing to give up some control in the teaching and learning process to empower the students and help build a learning community. Rourke and Anderson (2002b) state that it can be time consuming and difficult for the instructor to fulfill the responsibilities of teaching presence by himself/herself, Moreover, instructor led-discussions can revert to the recitation structure or initiate-respond-evaluate structure of traditional lectures, thus putting the students in a passive role. The authors compared the performance of peer teams and performance of the instructor on their ability to perform these three teaching presence roles. They found that a majority of students expressed preference for the peer teams as they found them more responsive, more interesting, and more structured. However, it is argued that the activities of direct instruction category should be performed by the course instructor as it requires content expertise (Anderson et al., 2001; Arbaugh & Hwang, 2006). Arbaugh and Hwang (2006) assert that course design and facilitating discourse can be done by anyone with experience in designing an online course or with facilitation training and skills, but only content experts can recognize content-related misconceptions or provide students additional materials relevant to course material.

There are many studies in the literature emphasizing the critical role of teachers and teaching on learning process and on the development of a learning community. For example, Shea, Pickett and Pelz, (2003, 2004) found a high correlation between student satisfaction and learning and perceived teaching presence. Students who reported high levels of instructional design and organization, effective discourse facilitation and direct instruction reported high levels of satisfaction and learning. In a later study, Shea, Li and Pickett (2006) investigated the relation between variations in online students' sense of classroom community and their perceived levels of instructors' teaching presence. They found a clear connection between perceived teaching presence and students' sense of a learning community. When the students reported effective instructional design and organization and "directed facilitation" of discourse, they were more likely to report

higher levels of a learning community. Another study which reinforces the influential role of the instructor in creating a conducive online learning environment also reveals a strong correlation between instructor immediacy and affective learning and moderate correlations between instructor immediacy and both cognitive and behavioral learning. (Baker, 2004). However, interaction with teachers is often reported as being limited in online learning environments. More frequent and prompt feedback from the instructors were suggested and valued by students to improve the quality of online programs (e.g Northrup, 2002; Kim, Liu, and Bonk, 2005).

The validity of the teaching presence construct developed by Anderson et al. (2001) was tested by other researchers (Shea, Pickett & Pelz, 2003; Arbaugh & Hwang, 2006: Shea, Li & Pickett, 2006). Shea et al. (2003) developed a survey to elicit students' perceptions of teaching presence using the categories devised by Anderson et al. (2001). Items were written as statements and students were asked to express their level of agreement based on a five-point Likert-type scale. Arbaugh and Hwang (2006) tested the construct validity of the dimensions of teaching presence using the survey developed by Shea et al. (2003) in their study. The results revealed that dropping some of the measurement items produced a table model with good fit between the data and the model (four of the 20 items did not fit well within the three components of teaching presence). Finally, teaching presence scale was developed as 13 items in the Community of Inquiry Survey (Swan et al., 2008; Arbaugh et al., 2008).

In summary, studies showed that teaching presence has a critical role on building a learning community and supporting critical discourse. Garrison and Arbaugh (2007) indicated that teaching presence is the unifying force in developing a community of inquiry that ensures discussions progress to resolution. Much work has been done about teaching in online and blended learning environments but much remains to be done to find out ways to support and enhance teaching presence in different course designs.

2.2.3 Cognitive Presence

Inquiry joins processes and outcomes (means-end) in a unified iterative cycle (Garrison & Vaughan, 2008), based on questioning both individually and collaboratively, seeking answers and then confirming understanding and testing solutions (Garrison, 2003). Cognitive presence in the CoI is fundamental to the establishment of this iterative cycle. Garrison, Anderson and Archer (2001) define cognitive presence as the extent to which

learners are able to construct and confirm meaning through sustained reflection and discourse. In other words, it means facilitating the analysis, construction, and confirmation of meaning within a community of learners through sustained discourse and reflection largely supported by text-based communication (Garrison & Anderson, 2003). According to Garrison et al. (2000), cognitive presence is the most basic to success in higher education. Cognitive presence is closely associated with critical thinking; it is an inclusive process of higher order reflection and discourse in practical inquiry. Cognitive presence reflects the intellectual climate of a true community of inquiry (Garrison, 2003).

Garrison et al. (2001) operationalized cognitive presence in terms of the Practical Inquiry model (see Figure 2). The reflective phases of practical inquiry or critical thinking are grounded in the pre and post reflective phases of the world of practice. The two axes that structure the model are action-deliberation and perception-conception. The first axis is reflection on practice. The second axis is the assimilation of information and the construction of meaning. Together they represent the process which iterates between thought and action and unifies the shared and personal worlds (Garrison, 2003). The quadrants reflect the logical or idealized sequence of practical inquiry (i.e., critical thinking) and correspond to the proposed categories of cognitive presence indicators (Garrison et al., 2000).

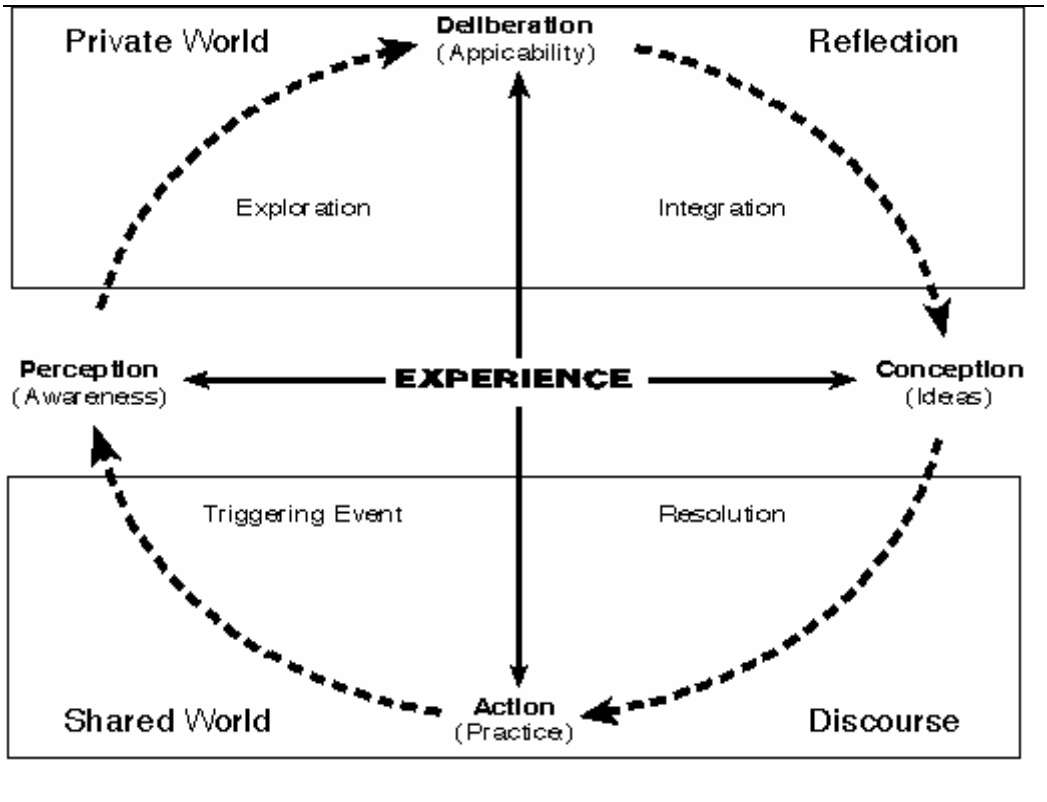

Figure 2 The Practical Inquiry Model

The Practical Inquiry model includes four phases in describing cognitive presence in an educational context generally and e-learning specifically (Garrison & Anderson, 2003). The descriptors and indicators of cognitive presence categories are presented in Table 1.

1. Triggering event: This phase initiates the inquiry process through a well-thought out activity to ensure full engagement and buy-in from the students. This has several positive outcomes in terms of involving students, assessing of the state of knowledge and generating unintended but constructive ideas.
2. Exploration: This phase focuses first on understanding the nature of the problem and the search for relevant information and possible explanation.
3. Integration: This phase moves into a more focused and structured phase of constructing meaning. Decisions are made about the integration of ideas and how to order can be created parsimoniously.

4. Resolution: This phase is the resolution of the dilemma or problem, whether that is reducing complexity by constructing a meaningful framework or discovering a contextually specific solution. This confirmation or testing phase may be accomplished by direct or vicarious action.

Table 1 Descriptors and Indicators of Cognitive presence

Phase	Descriptor	Indicator
Triggering event	Evocative (inductive)	Recognize Problem
		Puzzlement
Exploration	Inquisitive (Divergent)	Divergence
		Information Exchange
		Suggestions
		Brainstorming
		Intuitive leaps
Integration	Tentative (Convergent)	Convergence
		Synthesis
		Solutions
Resolution	Committed (Deductive)	Apply
		Test
		Defend

The Practical Inquiry (PI) Model has been used to investigate cognitive presence in many studies (e.g. McKlin, Harmon, Evans & Jone, 2002; Meyer, 2003; Meyer, 2004; Pawan, Paulus, Yalcin & Chang, 2003; Vaughan & Garrison, 2005; Stein, et al., 2007; Kanuka, Rourke & Laflamme, 2007). Some researchers also compared the PI model with other models (Buraphadeja & Dawson, 2008; Cotton & Yorke, 2006; Meyer, 2004; Schrire, 2004; 2006). For example, Schrire (2004) found that the PI model "to be the most relevant to the analysis of the cognitive dimension and represents a clear picture of the knowledge-building processes occurring in online discussion" (p. 491).

Most studies found the exploration phase to be the most active (e.g. McKlin, Harmon, Evans & Jone, 2002; Meyer, 2003; Pawan, Paulus, Yalcin & Chang, 2003; Vaughan & Garrison, 2005; Kanuka, Rourke & Laflamme, 2007; Stein et al., 2007). Cognitive presence is the most challenging to study and develop in online courses in terms of the three CoI presences (Garrison, 2003; Garrison and Arbaugh, 2007). The authors indicate that the primary issue regarding cognitive presence in an online learning environment relates to the progressive development of inquiry. That is, to explore how students move deliberately from understanding the problem or issue through to exploration, integration and application in the cycle of practical inquiry. In this regard, Stein et al. (2007) examined cognitive presence over time by comparing the differences between two chat postings. In short, the findings showed that exploratory statements increased over time indicating greater sharing of personal experience and previous knowledge.

Both social and teaching presences are critical for the development of cognitive presence. In terms of social presence, creating a comfortable environment for discussions was found important for the development of cognitive presence. Shea and Bidjerano (2009) found that comfort in online discussion was the most significant item correlated with variance in the cognitive presence of the respondents. The role of teaching presence on the development and progression of cognitive presence was emphasized in the studies of Meyer (2003) and Vaughan and Garrison (2005). Garrison and Cleveland-Innes (2005) highlight the role of structured collaboration on higher-order thinking in their study that explored the conditions in which deep learning emerges in an online collaborative environment. The authors suggest that high levels of critical thinking and learning is dependent on structured and coherent interaction or discourse. Kanuka and Garrison (2004) identified external (*discourse, collaboration, and management*) and internal (*reflection, monitoring, and the construction of knowledge*) constructs congruent with the CoI framework and higher-order learning. The authors suggest that combinations of internal and external constructs are important and even necessary for higher levels of learning.

In summary, cognitive presence is the most challenging of the three presences to study. Studies have shown the difficulty to take discussions through to the resolution/application phase. There needs to be more research to understand and

develop methods that support completing the practical inquiry cycle in an efficient and effective manner. The role of instructors in cultivating cognitive presence is significant in terms of how they structure both the course content and participant interactions (Garrison & Arbaugh, 2007). Research has mostly used qualitative methodologies (i.e., transcript analysis) to explore cognitive presence and learning process. However, with the recent development of the CoI Survey (Arbaugh, et al., 2008; Swan et al., 2008), quantitative measures of cognitive presence are possible.

2.3 Perceived Learning

Learning outcomes have been examined as an indicator of successful online or blended learning environments in many studies. Rovai (2002) indicates that grades have been primarily used to measure students' learning and asserts that using grades to operationalize learning may not always provide the best results. He recommends using self-report measures to measure learning outcomes instead of using grades. On the other hand, according to Verduin & Clark (1991), how students perceive their learning is crucial because, "the perceptions of various objects and events in adults' environments can have a strong impact on the total behavior of adults and can therefore cause adults to move in one direction or another" (p. 141).

Perceptions are dependent upon several factors and are most readily changed through the reexamination of beliefs, values, needs, attitudes, and the personal meanings of previous experiences (Verduin & Clark, 1991). There are studies about the determinants of factors influencing students' perceived learning outcomes. For example, Mingming and Evelyn (1999) found eleven factors significantly related to perceived learning: instructor-student interaction, instructor-student communication, instructor evaluation, instructor responses, student-student interaction, student-student communication, online discussion, written assignments, learning style, prior computer competency, and time spent on a course. The most influential factor was students' perceived interaction with their instructor, followed by online discussion. Similarly, Eom, Wen and Ashill (2006) examined course structure, instructor feedback, self motivation, learning style, interaction, and instructor facilitation as potential determinants of perceived learning outcomes and satisfaction in asynchronous online learning courses. The results of their study showed that only two of them, learning style and instructor feedback, affect perceived learning outcomes. Sense of community is another important variable

investigated as an influential factor on perceived learning. Rovai (2002) found a significant relationship between sense of community and perceived learning, which also affected dropout rate. He concluded, online learners who have a stronger sense of community and perceive greater learning should feel less isolated and have greater satisfaction with their academic programs, thereby resulting in fewer dropouts.

Arbaugh (2004) conducted a different study in order to explore whether there are changes in students' perceptions of learning between their first online course and subsequent online courses. The author expected that there would be a learning curve that the students must navigate as they work their way through an online course because of the novelty effect of roles and responsibilities for the new online learner. However, there was little to no change in perceived content learning with subsequent online course experience over a four year period. The author indicates that the lack of significant change in perceived learning suggests that content knowledge may not be as transferable as process knowledge in online degree programs. Rovai and Barnum (2003) also examined a number of online graduate courses to see how perceptions of learning varied by course. The results of their study indicated large differences in student perceptions of learning between online courses providing additional evidence that not all online programs and courses are equally effective. The authors also found gender differences on perceived learning indicating that female students reported significantly higher levels of perceived learning in their online courses than did male students.

Generally the researchers used one item (e.g. Rovai, 2002, Shea, 2006) or a few items (e.g. Mingming & Evelyn, 1999; Eom, Wen & Ashill, 2006) to measure students' perceived level of learning in online learning environments.

2.4 Satisfaction

In addition to perceived learning, satisfaction is another important variable that has been studied to assess the quality of online and blended learning environments. One of the critical questions regarding the effectiveness is how online learning opportunities can provide a consistent level of satisfaction for students (Allen, Burrell, Timmerman, Bourhis & Mabry, 2007). As Sener and Humbert (2004) indicate, student satisfaction is a vital element in determining the overall quality, success, and evolution of online and

blended learning environments as well as a complex, multi-faceted, and challenging area of evaluation.

Depending on the context, the definition of satisfaction varies. From a marketing perspective in which the students are seen as the ultimate customers, satisfaction is an important product/service outcome of the exchange between instructors and students (Wang, 2003). In the field of human-computer interaction, user satisfaction is described as the subjective sum of interactive experiences (Lindgaard & Dudek, 2003). From yet another perspective, So and Brush (2008) define satisfaction as "an affective learning outcome indicating the degree of: (a) learner reaction to values and quality of learning, and (b) motivation for learning" in their study about student satisfaction in blended learning environment.

Satisfaction is generally associated with student wants, but the problem with this view is that students do not always know what they want, and there are gaps between their wants and needs (Sener & Humbert, 2004). Providing a different approach to overcome this challenging gap, Garrison and Cleveland-Innes (2004) suggest that satisfaction and success should be addressed together as they influence each other to go beyond the narrow perspective and impression of student or the grade obtained in the course. According to Benke, Bishop, Thompson, Scarafiotti and Schweber (2004), student satisfaction should be interpreted as a blend of meeting the student's needs, faculty and programmatic expectations, and societal needs. In this perspective, the authors emphasize four pillars that influence the student satisfaction: learning effectiveness, cost-effectiveness, access, and faculty effectiveness.

Researchers have examined learners' satisfaction levels regarding the courseware systems, instructors or course structure, or by comparing online and traditional courses. Several variables have been studied in order to find out their effects on satisfaction. Some studies found low satisfaction level in online courses compared to traditional face-to-face courses (e.g. Summers, Waigandt, & Whittaker, 2005) and blended courses (e.g. Lim, Morris & Kupritz, 2006) or when the course moved from synchronous to asynchronous (e.g. Vamosi, Pierce & Slotkin, 2004). However, based on current meta-analytic studies, Allen et al. (2007) concluded that there is little difference between distance learning and face-to-face learning contexts in terms of student satisfaction. But, surprisingly, meta-analysis found that synchronous classrooms with simultaneous

communication report less satisfaction than asynchronous approaches. Sener and Humbert (2004) also suggest distinguishing student satisfaction in fully online learning environments and that in hybrid or blended learning environments. The authors believe that the approaches, needs, and current state of practice in each type are different in many respects and fully online environments are easier to study and evaluate than blended learning environments.

Besides these comparative studies, there are exploratory studies that investigate the factors affecting learner satisfaction in online learning environments. Computer skills, student-instructor interaction, and group dynamics were found to influence the satisfaction level by Hong (2002). The study of Sahin (2007) yielded four variables – personal relevance, instructor support, active learning and authentic learning that significantly and positively related to student satisfaction. Sun, Tsai, Finger, Chen and Yeh (2007) explored seven variables: leaner computer anxiety, instructor attitude toward e-learning, e-learning course flexibility, course quality, perceived usefulness, perceived ease of use, and diversity in assessment. Lin and Overbaugh (2007) found that students were more satisfied when they have the option to choose a discussion format. The effect of interaction on satisfaction has been studied in detail by other researchers. Research studies found that small group interaction (Driver, 2002) or collaborative interaction (Jung, Choi, Lim & Leem, 2002; So & Brush, 2008) creates higher levels of social presence and satisfaction.

Some studies emphasize the close relationship between faculty satisfaction and student satisfaction. Benke et al. (2004) identify the link between what satisfies students and what satisfies faculty as *interaction* and they state that higher levels of faculty satisfaction result in more satisfied students. A study conducted by Shea, Pickett and Pelz (2004) about teaching presence and student satisfaction yielded a positive relationship between faculty awareness of teaching presence and student satisfaction and learning. In short, their study found an increased level of satisfaction for students whose instructors had training about how to establish and maintain teaching presence. Wise, Chang, Duffy, and del Valle (2004) examined this linkage from a different perspective by manipulating the social presence cues in the instructor's messages to students from a formal to more friendly manner. The results of their study indicated that social presence increased the

number of messages written by the students and influenced their perception of the instructor, but it had no effect on perceived learning, satisfaction, or engagement.

In order to increase student satisfaction, there are some practices or course design issues offered in the literature. For example, Benke et al. (2004) emphasized student orientation, academic advising and tutorial services. Garrison and Cleveland-Innes (2004) indicated that teaching presence is essential at the start of a course as students face a major shift in approach. For these reasons, blended learning environments are gaining popularity to increase student satisfaction. Many authors assess blended learning as providing more opportunities and more learner centered instructions to provide consistent levels of student support and satisfaction (Garrison & Cleveland-Innes, 2004; Lim, Morris & Kupritz, 2006; Allen et al., 2007). According to Allen et al. (2007), the admonition of meta-analysis studies about satisfaction is that most effective educational practice is going to require a combination of both face to face and distance learning approaches to maximize the potential of every student in higher education. Considering that satisfaction and success are linked to interaction and learning, Garrison and Cleveland-Innes (2004) claim that when all three elements of a learning community (social, cognitive, and teaching presence) are integrated harmoniously in a way that supports critical discourse and reflection, then satisfaction and success result. The authors specifically emphasize the importance of teaching presence through which the full integration of cognitive and social elements can be realized and a community of inquiry can be created online.

2.5 Conclusion

Online and blended learning are becoming widespread with the changing needs of society and advances in technology. This situation calls for the need to explore and develop frameworks and models to understand the complex nature of teaching and learning in these environments. Garrison, Anderson and Archer (2000) developed the Community of Inquiry framework which assumes that learning occurs within a community through the interaction of three core elements: teaching presence, social presence and cognitive presence.

This chapter reviewed the related literature and discussed the research findings on teaching presence, cognitive presence, social presence, students' satisfaction, and

perceived learning in online and blended learning environments. It is concluded that the Community of Inquiry framework provides a foundation and perspective for systematically and comprehensively studying the complexities of online and blended learning (Garrison & Archer, 2007).

Studies have shown close relationships between the presences as well as their relations to satisfaction, achievement or perceived learning. However, as Garrison and Arbaugh (2007) indicated, to date there are few studies that examine the three elements of the framework simultaneously, either qualitatively or quantitatively. Therefore, future research should be done to comprehensively explore how the three presences affect each other in terms of outcomes such as satisfaction and perceived learning.

CHAPTER 3

METHODOLOGY

3.1 Introduction

This chapter introduces the research methodology of this study. It begins with the description of research design applied in the study followed by detail introduction of research context and study participants. The data collection and analysis methods are described after the specific research questions for the study are presented. In addition the procedure explaining how and when each data collection and analysis was applied is provided. Finally, the strategies to establish validity and reliability of the research are described as well as presenting the limitations of the research.

3.2 Research Design

The complex nature of online and blended learning calls for the use of multiple methods and multiple sources of data to understand group as well as individual learning (Gunawerdena, Carabajal & Lowe, 2001). Therefore, this study applied a mixed methodology approach which provides depth and breadth to the study which is not possible using either quantitative or qualitative data exclusively (Creswell, 2003; Tashakkori & Teddle, 2003). Providing an eclectic approach, mixed methods research is inclusive, pluralistic and complementary (Johnson, & Onwuegbuzie, 2004). Moreover, collecting multiple data and using different strategies, approaches, and methods may increase the validity and reliability by eliminating limitations of each single method and complementing one another (Tashakkori & Teddle, 2003; Johnson, & Onwuegbuzie, 2004; Onwuegbuzie, & Leech, 2004). Also, a mixed methodology best fits the pragmatic philosophy reflected in distance education literature (Maxcy, 2003; Saba, 2003). As Saba (2003) indicated pragmatism is evident for best practices and the establishment of methodological benchmarks.

Specifically, the study applied the concurrent triangulation strategy which is one of the most familiar of the six major mixed methods models. In a concurrent triangulation strategy, the researcher uses two different methods – qualitative and quantitative – in an attempt to confirm, cross validate, or corroborate findings within a single study. Qualitative and quantitative data collection is concurrent and ideally the priority is equal distributed across the two methods. This strategy uses separate methods as a means to offset the weaknesses of one method with the strengths of the other method. Interpretation can note convergence or the findings as a way to strengthen knowledge claims or explain any lack of convergence (Creswell, 2003).

The goal of this research was to provide detailed information about social presence, teaching presence and cognitive presence as well as students' satisfaction and achievement level. Therefore, the study included a wide range of data sources: online discussion postings, interviews with students and course instructor, the Community of Inquiry Survey, and learning outcomes.

3.3 Research Context

The context of the study was a graduate course on the topic of "blended learning" given in the fall and winter terms at a large conventional research university in Canada. The course was delivered online in the fall term of 2007 and blended in the winter term of 2008. Both courses were the focus of this research. The intent of the course is to explore the concept of blended learning in higher education, K to 12, and corporate training contexts (See Appendix C for course syllabus). Specific objectives include:

- investigating the nature of blended learning
- examining how face-to-face and online environments can be integrated to support deep approaches to learning
- discussing course redesign principles for blended learning
- developing course redesign scenarios

Both courses used asynchronous and synchronous communication technologies (i.e., Blackboard and Elluminate). In order to increase accessibility of the course instructor, virtual office hours through Elluminate were also applied regularly. In the first

Elluminate meeting, all students were welcomed and the course, objectives, assignments, students' responsibilities and assessment strategies were introduced.

The blended course has been given three times by the instructor at the time of the research. He had given the course in three different formats: face-to-face, online and blended. Each course applied a community of inquiry approach. The CoI framework not only provided the methodological framework but provided the structure for the content of the course. That is, it addressed issues of social, cognitive and teaching presence in terms of delivering the course in either an online or blended design. Learning activities, strategies and assessment techniques were all developed to reflect social, cognitive and teaching presence. The major assignments were article critiques and peer reviews, weekly online discussions (9 weeks of discussion in each course), and prototype course redesign projects. The article critique assignment was designed with the objective of enabling students to learn how to critically analyze articles related to blended learning, summarize their critique and peer review a critique posted by another student. The Course Redesign Prototype Project activity was designed to provide an opportunity for students to begin redesigning a course or program for blended learning. In particular, students were supposed to develop the rationale for a course or program redesign; articulate the theoretical framework for their redesign process; outline the course redesign including objectives, content, activities, assignments, and grading; and design a plan to evaluate the effectiveness of the course redesign. The weekly online discussions were designed to address the knowledge and skills that students needed to apply for their article critique assignment and course redesign prototype project. The topics and the purposes of the weekly online discussions were as follows:

- Introduction – Exploring the concept of Blended Learning,
- Communities of Inquiry Framework – Investigating the three overlapping presences (cognitive, social and teaching) in the communities of inquiry framework,
- Course Redesign Scenarios – Examining various types of categories of course redesign scenarios,
- Guidelines to Redesign – Discussing how to apply the principles associated with the three categories of teaching presence,

- Strategies & Tools – Exploring and discussing strategies and tools for blended learning,
- Blended Learning Professional Development – Discussing on types of professional development required to support blended learning approach,
- Evaluation – Exchanging ideas and resources for evaluating course redesign prototype projects,
- Leadership and Organizational Change – Discussing the type of leadership and organizational change required to support blended approach to learning and to trigger change in an institution,
- Future Directions of Blended Learning – Speculating about the future directions of blended learning.

One of the key components of students' final assignment was that students "articulate the theoretical framework for their redesign process." Therefore, as seen above various frameworks including the CoI framework along with other frameworks proposed by adult educators that could be used to support the process covered in the course. Some students selected the CoI framework but many others used other theoretical frameworks that they were already familiar with for their final projects. This situation created an advantage for interviews such that as students were already familiar with the CoI framework, they were better able to understand the interview questions and provide coherent responses to those questions.

As an example of how each of the presences were designed into the course, social presence was created by a warm welcome by the instructor in the first synchronous meeting (face-to-face in blended course and through Elluminate in online course) and reinforced via students' home pages and collaborative activities throughout the course. Cognitive presence was created and sustained when the instructor modeled how to facilitate the discussion in an effective way and when students felt comfortable to express and share their ideas in order to construct the knowledge and skills needed to apply for their article critique assignment and course redesign prototype project. In order to distribute teaching presence among students and teacher, students were responsible to facilitate and direct the online discussions in each of the remaining weeks. Palloff and Pratt (2007) indicate that promoting active asynchronous discussions is the

best means to support interactivity and the development of community. In the first online discussion, the instructor modeled how to facilitate the discussion in an effective way. It is now evident in the literature that students contribute to teaching presence by performing the activities and responsibilities of the instructor (Anderson et al, 2001; Garrison & Anderson, 2003; Arbaugh & Hwang, 2006; Rourke & Anderson, 2002b). Also, it is expected that the distribution of teaching presence through student moderation can attenuate the authoritative influence of a teacher and encourage freer discussion (Rourke & Anderson, 2002b).

3.4 Participants

The participants of the study were the graduate students enrolled in the course Blended Learning in the fall semester of 2007 and winter semester of 2008 at a large conventional research university in Canada. The total number of the students was 16 in the online course and 12 in the blended course. Only one student in the online course did not respond to the consent form and did not complete the survey. All the other students completed the consent form and selected their level of participation (See Appendix D for consent form). They all gave permission to use their online discussion postings for transcript analysis. Eleven students in the online course and nine students in the blended course also agreed to be interviewed.

3.5 Research Questions

The general question guiding this study is: "What are the social, teaching and cognitive presence posting patterns and student perceptions differences between online and blended course contexts?" The specific research questions are:

- What are the posting patterns of social, teaching and cognitive presence in online and blended course contexts?
- What are the differences on posting patterns of social, teaching and cognitive presence between online and blended course contexts?
- What are the students' perceptions of social, teaching and cognitive presence and learning and satisfaction in online and blended course contexts?

- What are the relationships among students' perceived levels of social presence, teaching presence and cognitive presence, overall satisfaction and perceived learning?
- What other factors do students identify regarding social, teaching and cognitive presence, satisfaction and learning in online and blended course contexts?

3.6 Data Collection and Analysis

3.6.1 Transcript Analysis of Online Discussion Postings

There were nine weeks of discussion covering the same topics in each course. Only the last week of discussion was excluded from the analysis which was about the final project where students could discuss about their projects freely. In order to explore students' cognitive presence, social presence and teaching presence, the messages that the course instructor or the guest speakers posted were excluded from the analysis. The total number of messages that students posted was 564 in the online course and 439 in the blended course.

Transcript analysis used here is a research technique for making replicable and valid inferences from data to their context (Krippendorf, 1980). As a research technique, transcript involves specialized procedures for processing scientific data. Like all research techniques, its purpose is to provide knowledge, new insights, a representation of facts, and a practical guide to action. Replicability means that when other researchers, at different points in time and perhaps under different circumstances, apply the technique to the same data, the results must be the same. According to Neuendorf (2002), the most distinctive characteristic that differentiates transcript analysis from other more qualitative or interpretive message analyses is the attempt to meet the standards of the scientific method attending to criteria such as objectivity-intersubjectivity, a priori design, reliability, validity, generalizability, replicability, and hypothesis testing.

The literature indicates a number of models and tools that have been developed in order to analyze online discussions especially to illuminate students' cognitive activity. In this study transcript analysis of online discussions was applied using the category indicators defined in the CoI framework. Social presence was analyzed in the transcripts by coding for affective expression, open communication and group cohesion (Rourke, Anderson, Garrison & Archer, 2001a). Cognitive presence was coded using the indicators of the

four phases of the Practical Inquiry Model: triggering event, exploration, integration and resolution (Garrison, Anderson & Archer, 2001). Teaching presence was coded for design and organization, facilitating discourse, and direct instruction (Anderson, Rourke, Garrison & Archer, 2001). Previous studies have also utilized the CoI presence indicators to understand interaction through text analysis (e.g. McKlin, Harmon, Evans, & Jone, 2002; Swan, 2002; Rourke & Anderson, 2002b; Meyer; 2003; Vaughan & Garrison, 2005; Nippard & Murphy, 2007; Lomicka & Lord, 2007; Stein, et al., 2007, Kanuka, Rourke & Laflamme, 2007). The Practical Inquiry model in CoI framework has been studied widely along with other models (Buraphadeja, & Dawson, 2008; Cotton & Yorke, 2006; Meyer, 2004; Schrire, 2004; 2006). Schrire (2004) found that the PI model "to be the most relevant to the analysis of the cognitive dimension and represents a clear picture of the knowledge-building processes occurring in online discussion" (p. 491). Recently, Buraphadeja and Dawson (2008) also indicated that, along with other models, the PI model in the CoI is suitable for assessing critical thinking as the CoI framework has been continually developed and has been widely cited in the literature.

The unit of analysis was the message posted by students. Selecting the message as the unit of analysis has several advantages: (i) it is objectively identifiable; (ii) it produces a manageable set of cases; (iii) it exhaustively and exclusively encompasses the sought after construct; and (iv) it is a unit whose parameters are determined by the author of the message (Rourke, Anderson, Garrison & Archer, 2001b). Consistent with the research methodology both manifest and latent content analysis strategies were applied. Each message was coded based on category indicators defined in the CoI framework as well as the meaning of that message in the context of the discussion. Each message was coded for each presence separately. The most obvious category of teaching presence and social presence and the highest category for cognitive presence was coded. For example, if a single message included both *triggering event* and *exploration* categories of cognitive presence, the exploration phase was selected for final coding.

The author and a research assistant analyzed the transcripts by applying a negotiated coding approach (Garrison, Cleveland-Innes, Koole & Kappelman, 2006). Before starting the coding process the researchers had training from Dr. Randy Garrison, Dr. Liam Rourke and an experienced coder. During training sessions, the CoI framework and its constituting elements as well as their indicators in discussion postings were

introduced and the sample coding was applied. The researchers coded two discussion transcripts of a previous online course to get experience and gain familiarity with the process. The inter-rater reliability refers to the amount of agreement or correspondence among two or more coders (Neuendorf, 2002). In this research inter-rater reliability was calculated using Holsti's coefficient of reliability (1969). Holsti's coefficient of reliability (C.R.) is the percent of agreement measure in which the number of agreements between the first and the second coder are divided by the total number of coding decisions. In the formula below, M is the times the two coders agree, and N_1 and N_2 are coding decisions each coder made.

$$CR = \frac{2M}{N1 + N2} \tag{3.1}$$

The inter-rater reliability of the first training session for coding the transcripts was .75. This provided an estimate of reliability between the coders, before the adoption and advantage of a negotiated coding approach. In the negotiated approach, the researchers coded transcripts separately and then actively discussed their respective codes on differences to arrive at a final assessment of the code. There had been few times when coders needed to consult experts to reach consensus at the beginnings of coding process. Negotiation provided a means of on-going training, coding scheme refinement, controls for simple errors, thereby, increasing reliability (Garrison, Cleveland-Innes, Koole & Kappelman, 2006).

Transcript analysis yielded frequency values for each category of the CoI presences. These frequencies were also converted to percentage values for further analysis to explore the differences between two courses in terms of each presence. Independent samples "t-test" was applied having the factor as course (online and blended) and the categories of social presence, teaching presence and cognitive presence. Due to the small sample size, the Mann-Whitney U test was also conducted to compare the differences.

3.6.2 Interviews

An interview is a useful way to get large amounts of data quickly (Marshall & Rossman, 1999) and it is defined by Patton (1990) as the most effective strategy to ascertain the in-

depth perspectives of others. In this study semi-structured interviews with students and unstructured interviews with the course instructor were conducted. A semi-structured interview schedule was used in the study which is a list of questions or issues that are to be explored in the course of an interview (Patton, 1990). The reason to select a semi-structure interview is that it also provides topics or subject areas within which the interviewer is free to explore, probe, and ask questions that will elucidate and illuminate that particular subject beyond the pre-prepared questions (Yıldırım & Şimşek, 2005).

Interviews were conducted with eleven voluntary students from the online course and nine voluntary students from the blended course at the end of each term in order to provide detailed information about their perceptions of the community of inquiry in relation to their perceived learning and satisfaction. As most of the students were in different cities and they were busy, they preferred being interviewed through synchronous online meetings. Therefore, Elluminate was used as the students were familiar with it. With the other four students (one from online course and three from blended course), the interviews were conducted face-to-face. For the student in the online course, a face-to-face interview was conducted because of the technical problems the student had with Elluminate. (For interview questions, see Appendix A).

An unstructured interview was conducted with the course instructor three weeks after the blended course ended. During the interview, instructor perceptions of each presence in each course and the themes that emerged from the student interviews were covered. The main emphasis was exploring the similarities and differences between online and blended communities of inquiry in relation to the students learning and satisfaction.

With informed consent, the interviews were recorded and were later transcribed. One interview transcript from the online course and one from the blended course were analyzed separately by the lead researcher and a second researcher who was knowledgeable about CoI framework and had experience on qualitative analysis. This strategy was applied to optimize the credibility of the coded data. Most of the categories were same or similar as both researchers utilized the CoI framework and interview questions to develop initial categories. The remaining categories which emerged during the analysis were differed in labeling, for example, one researcher labeled a category as "contextual contingencies" whereas the other researcher used "Barriers/limitations" to identify the factors affecting the development of a community of inquiry. The wording

differences were found in the study of Armstrong, Gosling, Weinman and Martaeu (1997) in which six analysts analyzed the same focus group interview data. The authors explain the differences such that "*all analysis is a form of interpretation and interpretation involves a dialogue between researcher and data in which the researcher's own views have important effects*" (p.5). Two researchers had a meeting to compare their coding and negotiated the differences until they arrived at a 100% agreement. The author of this research did the analysis of the remaining interviews by following the steps below:

- All the transcribed data was read to get a sense of the whole data. Each discrete incident derived from a sentence or paragraph was labeled with a code representing the phenomenon.
- A primary matrix was created. The initial categories based on the Community of Inquiry framework and interview questions and the new categories and sub categories of each that were developed inductively during the analysis (Maxwell, 1996) were all formed the columns of the matrix whereas the rows were representing the participants.
- Each cell of a participant in the matrix was filled with the codes that represented the categories by searching the data of that participant line by line.
- For further investigation of the themes and concepts, more detailed matrices of each category were developed. These secondary matrices also included representative quotations related to the categories. Working with these matrices provided comparison and classification of the coded data of all participants.

The transcripts from the blended course were analyzed using the matrix developed during the analysis for online course transcripts. Additional columns were added when there was a new category emerged. After having analyzed the blended course transcripts, the transcripts from both courses were combined and data analysis process was conducted again to evaluate the plausibility of the analysis overall. This also provided further refinement of the connections between a category and its subcategories. The researcher had an external check read and comment on the initial interview results.

3.6.3 Community of Inquiry Survey

The CoI Survey was administered at the end of the class to explore perception levels of students and to assess the relationships among the three presences and student perceived learning and satisfaction. The structural validity of the CoI framework has been tested in previous studies (Garrison, Cleveland-Innes & Fung, 2004; Shea, 2006; Arbaugh & Hwang, 2006; Arbaugh, 2007). The CoI Survey used in this study was developed and validated basing on previous studies (Arbaugh, et al., 2008; Swan, et al., 2008). Cronbach's Alpha was 0.94 for teaching presence, 0.91 for social presence, and 0.95 for cognitive presence. The survey included teaching presence perception (13 items), social presence perception (9 items), cognitive presence perception (12 items), an item for perceived learning, and one item for perceived satisfaction. Fifteen students (out of 16) from the online course and all the students (12) from the blended course completed the survey. In order to get detailed information about how students perceive teaching presence, social presence, cognitive presence, and how these presences influence their satisfaction and learning, four open ended questions have been added at the end of the questionnaire (See Appendix B).

Descriptive statistics were applied in order to find out the perceived levels of teaching, social and cognitive presence, and satisfaction. For further examination, correlation analysis was employed to answer the research questions regarding the relationships among the variables defined: teaching, social and cognitive presence, achievement, and satisfaction. Correlation is an appropriate measure of the effect size when the major purpose of the quantitative data analysis is to assess the degree of relationships and associations of the variables (Tabachnick & Fidell, 2001). In order to examine the relationships in more detail, Spearman Rho correlation coefficient was conducted to indicate the degree that quantitative variables (perceived learning, satisfaction, social presence, cognitive presence and teaching presence) are linearly related in a sample. Independent samples "t-test" was applied to explore whether the two courses differ from each other in terms of perceived learning, satisfaction, and perceived levels of teaching, social and cognitive presence. Due to the small sample size, the Mann-Whitney U test was also conducted to compare the differences.

3.6.4 Documents and Artifacts

Collecting documents and artifacts is an unobtrusive method that is rich in portraying the values and beliefs of participants in specific settings (Bogdan & Biklen, 1998). Patton (1990) also suggested that analysis of such documents and artifacts gives a "behind-the-scenes look at the program may not be directly observable and about which the interviewer might not ask appropriate questions without the leads provided through the document" (p.245). Also, Arbaugh (2007) argues that techniques such as transcript analysis may not completely capture the cognitive inquiry process; therefore, the author suggests supplementing these with some sort of data collection at the end of the course. Students' grades and participation in online discussions were used to provide deeper and detailed information for the research. Students' grades were comprised of their discussion board activities (25%), an article critique assignment (25%), and a course redesign project (50%). Independent "t-test" and the Mann Whitney U test were applied to explore whether the two courses differ from each other in terms of final grades.

3.7 Procedure

Ethics review certification was received from the university to conduct this study. In the first synchronous meeting using Elluminate of the online course and in the first face-to-face meeting of the blended course, the researcher introduced herself to the students and explained the purpose of the research, data collection methods, and what was expected from students. Students concerns and questions were addressed during these meetings. The participant consent form was sent to the online course students by email and delivered face-to-face during the meeting to the blended course students prior to engaging in this research study.

During both semesters, transcript analysis of online discussions was conducted by two researchers. After all the discussions finished, the students were requested to respond to the CoI Survey. The questionnaire was delivered using an online survey delivery platform. Before the semester ended, the students who agreed to participate were invited for interviews. Apart from one student in the online course and three students from the blended course who preferred face-to-face interviews, all the interviews were conducted using Elluminate.

3.8 Validity and Reliability Issues

Validity refers to the accuracy of the scientific findings and reliability refers to the replicability of scientific findings (LeCompte and Goetz, 1982). Tashakkori and Teddle (2003) propose the term "inference quality" to refer to internal validity (in quantitative methodology) and credibility (in qualitative methodology) specific to mixed methods research. There are two important aspects of inference quality: design quality which "comprises the standards for evaluation of the methodological rigor of the mixed methods research" and the interpretive rigor which "comprises the standards for the evaluation of the accuracy or authenticity of the conclusions" (p.37). As Creswell (2003) suggested, to ensure validity and reliability in mixed methods research, the strategies to provide validity and reliability from both the qualitative and quantitative orientations were applied in this research.

The structural validity of the CoI framework has been tested in previous studies (Garrison, Cleveland-Innes & Fung, 2004; Shea, 2006; Arbaugh & Hwang, 2006; Arbaugh, 2007; Arbaugh et al., 2008). The CoI Survey used in this study was developed and validated in previous studies (Arbaugh et al., 2008; Swan et al., 2008). Cronbach's Alpha was 0.94 for teaching presence, 0.91 for social presence, and 0.95 for cognitive presence.

To ensure reliability of transcript analysis, two researchers (one is the author) independently coded online discussion postings and their analyses were compared to identify places of agreement and disagreement after having trained. The inter-rater reliability was calculated using Holsti's coefficient of reliability (1969) which was found to be .75 for the piloted transcripts. Moreover, the researchers applied a negotiation approach which provided a means of on-going training, coding scheme refinement, controls for simple errors, thereby, increasing reliability (Garrison, Cleveland-Innes, Koole & Kappelman, 2006).

Mixed methods research inherently enables triangulation which is one of the strategies to improve the probability that findings and interpretations will be found credible (Lincoln & Guba, 1999). Triangulation strategy reduces the risk of chance associations and of systematic biases due to a specific method and allows a better assessment of the generality of the explanations (Maxwell, 1996). In this research, triangulation was applied by using multiple sources of data such as student and instructor interviews,

online postings, a questionnaire, and by using multiple methods (i.e., qualitative and quantitative). Also, throughout the research process, a peer debriefing strategy was applied as an external check on the inquiry process (Lincoln & Guba, 1999). The debriefing sessions provided opportunities to explore meanings, clarify interpretations, and mitigate researcher bias.

Thick description strategy was applied especially for increasing the probability of the transferability of the findings; therefore, the description included everything which the readers may need to read in order to understand the findings (Lincoln & Guba, 1999).

3.9 Limitations of the Study

The study was bounded and situated in a specific context. The findings, therefore, cannot be generalized. However, readers can make appropriate judgments regarding possible applications to similar learning or research contexts with similar student populations. The researcher provided thick descriptions of contextual information such as the course, student characteristics, or learning activities for the readers.

Finally, the small sample size of this study decreased the power of correlation statistics. Thus, readers should be cautious about interpreting the correlation analysis results and should not regard them as causal relationship claims.

3.10 Summary of Methodology

The main purpose of this research was to examine the development of social, teaching and cognitive presence and student perception differences between online and blended course contexts. The study applied a mixed methods research design to investigate the research questions. The context of the study was a graduate course on the topic of "Blended Learning" given fully online in the fall term and in a blended format in the winter term at a large conventional research university. There were 16 students in the online course and 12 students in the blended course. The data collected through transcript analysis of online discussions, interviews with students, and the course instructor, and CoI Survey. Also, additional data such as students' final grades and participation in online discussions were collected to provide detail information. Table 2 summarizes the methodology of this research.

Table 2 Summary of Research Questions, Data Sources and Analysis

Research Questions	Data Sources	Data Analysis
What are the posting patterns of social, teaching and cognitive presence in online and blended course contexts?	• Transcripts of Online Discussions	• Transcript Analysis in conjunction with negotiated approach
What are the differences on posting patterns of social, teaching and cognitive presence between online and blended course contexts?	• Transcripts of Online Discussions	• Transcript Analysis in conjunction with negotiated approach
What are the students' perceptions of social, teaching, cognitive presence and learning and satisfaction in online and blended course contexts?	• Community of Inquiry Survey • Interviews with students • Interview with course instructor	• Descriptive analysis of CoI Survey • Qualitative analysis of interviews
What are the relationships among students' perceived levels of social presence, teaching presence and cognitive presence, overall satisfaction and perceived learning?	• Community of Inquiry Survey • Interviews with students	• Correlational Analysis of CoI Survey • Qualitative analysis of interviews
What other factors do students identify regarding social, teaching and cognitive presence, satisfaction and learning in online and blended course contexts?	• Interviews with students and course instructor	• Qualitative analysis of interviews

CHAPTER 4

RESULTS

4.1 Introduction

This chapter presents the research findings specific to research questions. The results presented are derived from the transcript analysis of online discussions, community of inquiry survey analysis, content analysis of interviews and some other documents and artifacts such as students' participation rates and final grades. Overall, the results include the development of community of inquiry presences, students' perception differences in online and blended course contexts as well as the relationships among community of inquiry presences and satisfaction and learning.

4.2 Student Demographics

Table 3 shows the summary of demographic information of the students obtained through the CoI Survey. The total number of the students was 16 in the online course and 12 in the blended course. Only one student in the online course did not respond to the CoI Survey. Six male and nine female students completed the survey in the online course and six male and six female students in the blended course. The demographic data showed that all the students were mature in age; mostly over 30 in both courses. Apart from six students in the online course who attended the course from different cities, all other students in both courses lived in the city where the university is located. All the students were enrolled in the Master of Education graduate program in online course. Eight students in the blended course also were in the Master of Education; only four of them were in different programs or had different status. With regard to their computer skills, fourteen students indicated that they had intermediate computer skills while thirteen of them had advanced computer skills. Most of the students (12 in online

course; 7 in blended course) have previous online/blended learning experience and some of them (8 in online course) had taken all previous courses in online/blended environments.

Table 3 Demographics of Participants

Course	Age	Gender	Where they live	Computer Skills
ONLINE	20-29 : 0	Male: 6	Same city: 6	Novice: 0
	30-39: 8	Female: 9	Same province: 4	Intermediate: 6
	40-49: 6		Other Province: 4	Advanced: 9
	50 or above :1		Other country: 1	
BLENDED	20-29 : 1	Male: 6	Same city: 12	Novice: 0
	30-39: 7	Female: 6		Intermediate: 8
	40-49: 2			Advanced: 4
	50 or above: 2			

With regard to the students' characteristics in each course, the instructor expressed that both groups of students were similar in terms of their work areas, backgrounds and gender split. The instructor also stated that some students were already familiar with the CoI framework as they had been introduced to the construct in their previous courses or programs. The only difference between the two groups as indicated by the instructor was in terms of their experience in the graduate program. The students in online course had more experience in the graduate program compared to blended course students. Most of them were very close to finishing their program. However, he also stated that the students in the blended course had a lot of experience in the field which may have mitigated the difference between the two course formats.

4.3 Student Participation

Student participation in weekly discussions were regularly recorded. There were nine weeks of discussions covering the same topics in each course. Table 4 shows the summary of students' activity including the number of students, attendance rates,

average number of postings per week, and average number of postings per student in each course. For the blended course, the attendance rate in the discussions was 98 percent, which was slightly higher than the online course. Table 5 shows students' participation on the discussion board in three weeks chunks. The main difference is seen in the blended course; the participation in the middle of the course increased relatively compared to other weeks. In order to explore students' posting patterns of each presence in the discussion board, the messages posted by the instructor and guest speakers were excluded from the table and calculations.

Table 4 Summary of Students' Activity in Computer Mediated Discussion Forum

	Number of Students	Attendance Rate	Average number of postings per week	Average number of postings per student
Online Course	16	92 %	63	4.3
Blended Course	12	98 %	49	4.1

Table 5 Number of Messages Students Sent in Discussion Board throughout the Course

	First 3 weeks	Second 3 weeks	Last 3 weeks
Online Course	178	200	186
Blended Course	107	184	148

4.4 Posting Patterns of Community of Inquiry Presences

4.4.1 Social Presence

Social presence was analyzed in the transcripts by coding for affective expression, open communication and group cohesion. The indicators and examples for each category of social presence derived from transcript analysis are shown in Table 6. The names in the examples are not representing the actual names of participants to avoid ethical concerns. Table 7 illustrates the comparison of the coding results for categories of social presence in three week periods between the online and blended courses. Overall, the table shows that there were more social presence indicators in the messages posted by online course students throughout the course. In both the courses, majority of the messages were coded as open communication (48% in online course and 41% in blended course). As seen in Table 7, the main differences between the two courses are: (i) affective expression was found more in the online course compared to the blended course and (ii) group cohesion was found more in the blended course. The table also indicates an increase and a decrease on these categories over time. First, affective expression in the blended format decreased continually throughout the course. Second, group cohesion in the online format increased steadily throughout the course.

Table 6 Social Presence Coding Indicators and Examples

SOCIAL PRESENCE		
Categories	**Indicator**	**Examples**
Affective (AF)	Expressing emotions	This discussion has been great, I've enjoyed it tremendously..
	Use of Humor	In this day and age does not that seem a bit arcane? I smell change in the wind
	Self-Disclosure	For me as a teacher in elementary school... My kid was also used to ....
	Use of unconventional expressions to express emotion	A HUGE word of THANKS Good stuff John :) You all ROCK!!!!! LOL
Open Communication (OC)	Continuing a thread	In response to your question…
	Quoting from others' messages	What I am most curious about, is your statement that "... there are …..".
	Referring explicitly to others' messages	You mentioned that peer editing and using blackboard...
	Asking questions	Can anyone show me how to put a survey in D2L?
	Complimenting, expressing appreciation	Kevin, you have some excellent ideas here
	Expressing agreement/ disagreement	I totally agree with you that…
Group Cohesion (GC)	Vocatives	I think Sharon's idea seems.... Robert, do you think...
	Addresses or refers to the group using inclusive pronouns	I have gained from reading our text... I guess most of us..
	Phatics, salutations	Hello everyone/ Hi Susan/ Take care

Table 7 Comparison of Coding Results for Social Presence between Courses

SOCIAL PRESENCE	First 3 weeks of Discussion		Second 3 weeks of discussion		Last 3 weeks of discussion		TOTAL	
	Online	*Blended*	*Online*	*Blended*	*Online*	*Blended*	*Online*	*Blended*
Affective Expression	34 %	17 %	39 %	14 %	25 %	6 %	**33 %**	**12 %**
Open Communication	58 %	36 %	43 %	49 %	43 %	38 %	**48 %**	**41 %**
Group Cohesion	7 %	23 %	16 %	22 %	20 %	28 %	**14 %**	**24 %**
No category detected	0 %	25 %	4 %	16 %	12 %	29 %	5 %	23 %

Further analysis was conducted in order to explore whether there are any statistical differences between the online and blended courses in terms of social presence posting patterns. Independent samples "t-test" was applied having the categories of social presence (affective expression, open communication and group cohesion) as the dependent variables and the course as the independent variable. As seen in Table 8, the test was significant for affective expression category ($t(26)=3.757$, $p=.001$) and group cohesion category ($t(26)=-3.83$, $p=.001$). As mean values for these categories indicated, affective expression was found to be more frequent in the online course ($M=36.24$) than the blended course ($M=15.69$), whereas group cohesion was more frequent in the blended course ($M=26.61$) compared to the online course ($M=10.89$). The percentages of the messages that included open communication were not significantly different between online and blended course ($p=.645$). Figure 3 illuminates the difference between two courses.

Table 8 Independent t-test Results for Social Presence

SOCIAL PRESENCE	**Online Course**	**Blended Course**			
	Mean	**Mean**	**t**	**df**	**P**
Affective Expression	36.24	15.69	3.757	26	.001
Open Communication	39.41	41.78	-.466	26	.645
Group Cohesion	10.89	26.61	-3.830	26	.001

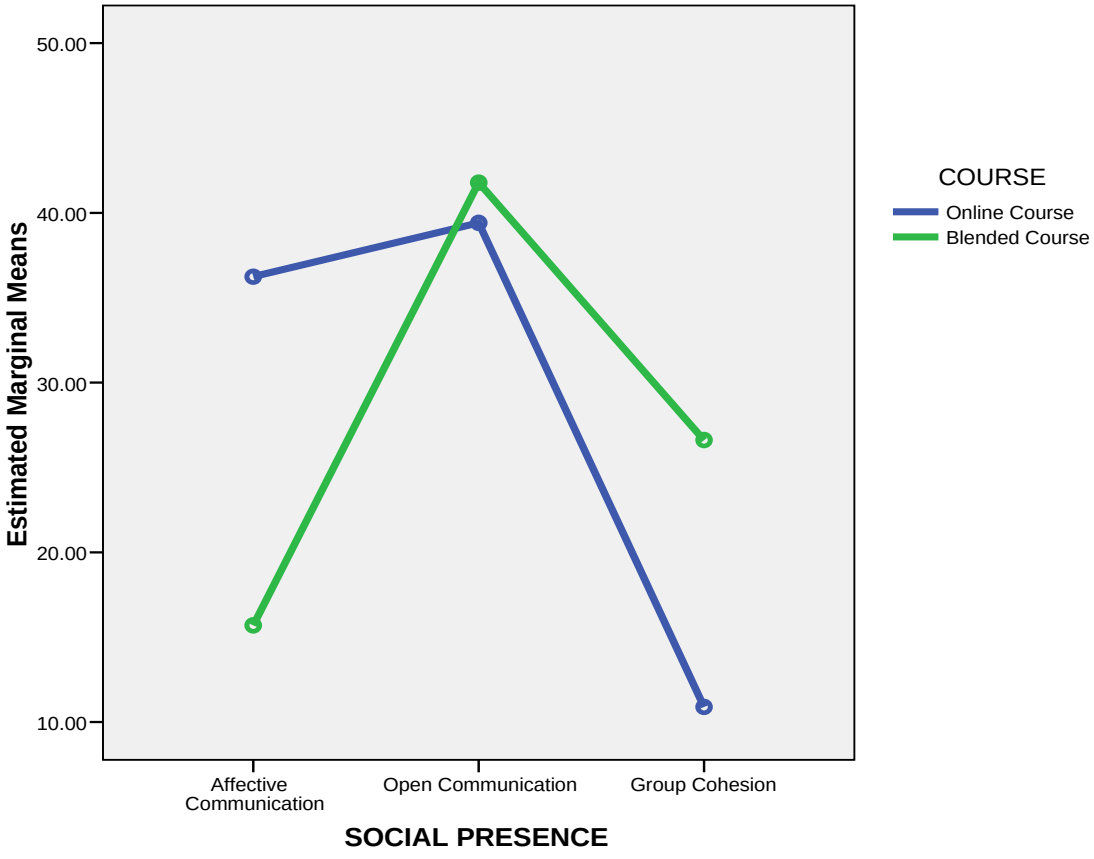

Figure 3 Scatter Plot of Social Presence in Online and Blended Courses

Due to the small sample size, Mann Whitney U test was also conducted to compare the differences. Mann-Whitney U test is the non-parametric option to the "t-test". The results of the test were consistent with the independent "t-test" results. The test yielded significant differences for affective communication (p=.002) and group cohesion (p=.003) categories between online and blended courses (Table 9).

Table 9 Mann-Whitney U test Results for Social Presence

SOCIAL PRESENCE	Online Course	Blended Course		
	Mean Rank	Mean Rank	U	p
Affective Expression	18.66	8.96	29.500	.002
Open Communication	13.63	15.67	82.000	.516
Group Cohesion	10.44	19.92	31.000	.003

4.4.2 Teaching Presence

Teaching presence was coded for design and organization, facilitating discourse, and direct instruction. The indicators and examples for each category of teaching presence derived from transcript analysis are shown in Table 10. The names in the examples are not representing the actual names of participants to avoid ethical concerns. Table 11 illustrates the coding results for categories of teaching presence in terms of three week segments for both courses. Overall, compared to the other two presences, there were fewer indicators of teaching presence in the online discussions in both courses. As seen in Table 11, virtually none of the messages in both courses were coded as design and organization. On the other hand, online course discussions included more facilitating discourse and direct instruction indicators compared to the blended course discussions. Also, the number of indicators for direct instruction category in the online course increased over time, especially after the first three weeks of the course. Apart from the first three weeks, the percentage of facilitating discourse in each course was identical.

Table 10 Teaching Presence Coding Indicators and Examples

TEACHING PRESENCE		
Categories	**Indicators**	**Examples**
Design and Organization (DO)	Setting curriculum (including assessment)	This week we will be discussing….
	Designing methods	Reflect on this week's readings and your plans for evaluation….
	Establishing time parameters	Please post a message by Friday
	Utilizing medium effectively	Try to keep issues that others have raised when you post
	Establishing netiquette	Keep your messages short
	Making macro-level comments about course content	This discussion will also help you about your projects to explore…..
Facilitating Discourse (FD)	Identifying areas of agreement/disagreement	Joe and Mary has provided a compelling counter-example to your argument. Would you care to respond?
	Seeking to reach consensus	You comment is congruent with Joanne's comment that …...
	Encouraging, acknowledging, or reinforcing student contributions	You have raised an important issue….. Great summary of the points...
	Setting climate for learning	Don't feel self-conscious about thinking cut loud on the forum, this is the place to try out ides…
	Drawing in participants, prompting discussion	Anyone got any ideas about… I'd enjoy to hear your thoughts…
	Assessing the efficacy of the process	It sounds like you are moving right along. This is being a great discussion …
Direct Instruction (DI)	Present content/questions	Garrison and Vaughan state that "…." So what do you think in your organization….?
	Focus the discussion on specific issues	I would suggest you think from the perspective of ……
	Summarize the discussion	It seems that most of us have ….. David's and Carol's suggestions for this….. We can also….
	Confirm understanding through assessment and explanatory feedback	Your interpretation is correct. Staff is required….
	Diagnose misconceptions	You are right ….. but there is … so you should think about…..
	Inject knowledge from diverse sources, eg. (textbook, articles, internet, personal experience (includes pointers to resources)	The literature indicates that … Rogers, Everett M. (2003). Diffusion…… http://www.school……
	Responding to technical problems	Adding videos to your postings can be done …..

Table 11 Comparison of Coding Results for Teaching Presence within Three Time Periods

TEACHING PRESENCE	**First 3 weeks of Discussion**		**Second 3 weeks of discussion**		**Last 3 weeks of discussion**		**TOTAL**	
	Online	*Blended*	*Online*	*Blended*	*Online*	*Blended*	*Online*	*Blended*
Design and Organization	1 %	0 %	1 %	0 %	0 %	0 %	**1 %**	**0 %**
Facilitating Discourse	28 %	18 %	23 %	23 %	25 %	23 %	**25 %**	**21 %**
Direct Instruction	19 %	19 %	33 %	24 %	38 %	21 %	**30 %**	**21 %**
No category detected	53 %	63 %	44 %	53 %	38 %	56 %	45 %	57 %

Further analysis was conducted to see whether there were any statistical differences between the online and blended courses in terms of teaching presence. The independent "t-test" was applied for the categories of teaching presence (design & organization, facilitating discourse and direct instruction). The analysis did not indicate any significant differences for teaching presence categories between the courses (Table 12). The Mann-Whitney U test also did not yield any significant differences for the categories of teaching presence (Table 13). Figure 4 illustrates each category in both courses. Although the scatter plot showed higher direct instruction in online course, none of the tests indicated a statistically significant difference.

Table 12 Independent t-test Results for Teaching Presence

TEACHING PRESENCE	**Online Course**	**Blended Course**			
	Mean	**Mean**	**t**	**df**	**p**
Design & Organization	.26	.00	1.584	26	.125
Facilitating Discourse	19.51	18.97	.144	26	.887
Direct Instruction	29.35	22.13	1.352	26	.188

Table 13 Mann-Whitney U test Results for Teaching Presence

TEACHING PRESENCE	**Online Course**	**Blended Course**		
	Mean Rank	**Mean Rank**	**U**	**p**
Design & Organization	15.63	13.00	78.000	.120
Facilitating Discourse	14.56	14.42	95.000	.963
Direct Instruction	15.75	12.83	76.000	.371

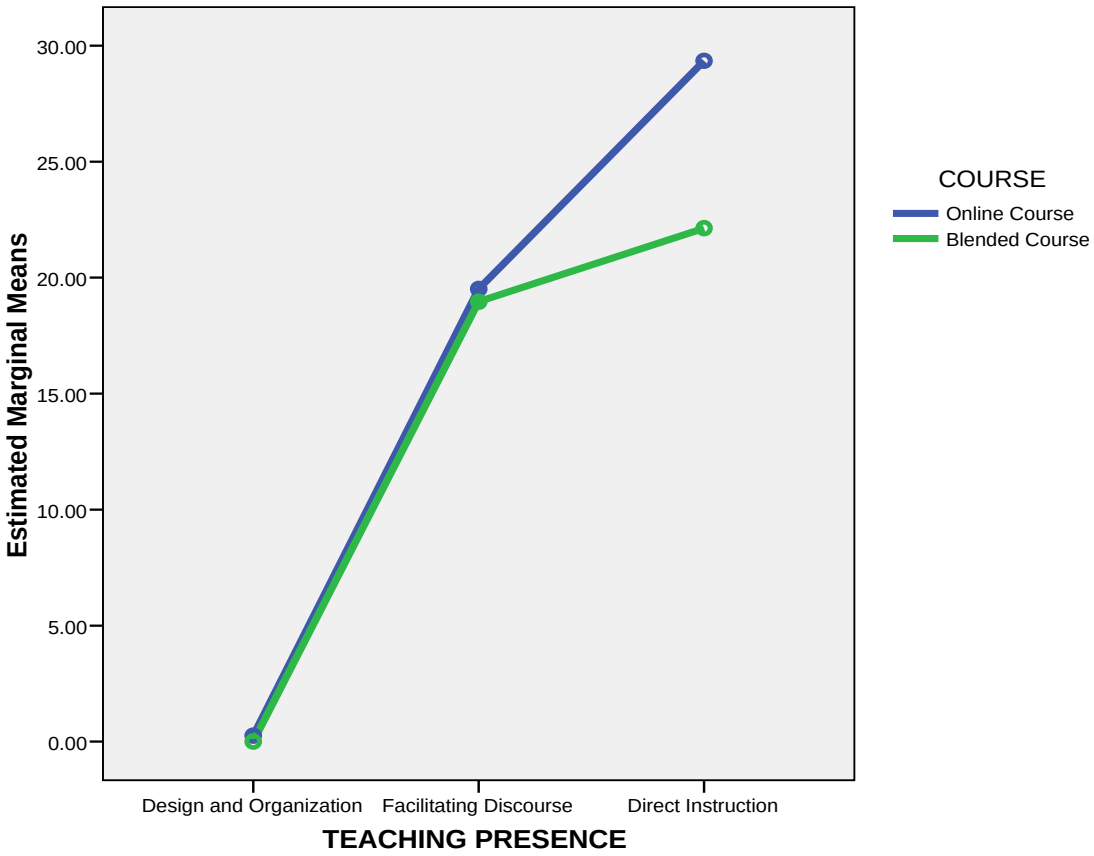

Figure 4 Scatter Plot of Teaching Presence in Online and Blended Courses

4.4.3 Cognitive Presence

Cognitive presence was analyzed in the transcripts by coding for the triggering event, exploration, integration and resolution. The indicators and examples for each category of cognitive presence derived from transcript analysis are shown in Table 14. The names in the examples are not representing the actual names of participants to avoid ethical concerns. Table 15 illustrates the coding results for categories of cognitive presence over the three segments of time in both courses. As the distribution of percentages for each category of cognitive presence showed, the integration phase was the most frequently coded category of messages posted by students in both courses. However, integration was found more frequently in the blended course whereas exploration was found less in blended course. The triggering event and resolution phases were low in both courses.

There were less triggering event indicators found in the blended course than in the online course.

Table 14 Cognitive Presence Coding Indicators and Examples

COGNITIVE PRESENCE		
Category	**Indicator**	**Examples**
Triggering Event (TE)	Recognize the problem	In education, there are desired goals although successful achievement for some might be challenging to measure (i.e. critical thinking). Therefore, should the learner-centered model be implemented at the discretion of an instructor?
	Sense of puzzlement	
Exploration (EX)	Divergence-within the online community	First, I think resource barriers or at least spending limits are a good thing …..Second, I think that PD needs to be compulsory ... The first thing that comes to my mind is ……. I have a similar experience in my ..... Would you think of applying ..... Moodle was implemented in our division thre years ago. In the last year..... I was reading an article about .... and it says that .....
	Divergence-within a single message	
	Information exchange	
	Suggestions for considerations	
	Brainstorming	
	Leaps to conclusions	
Integration (INT)	Convergence-among group members	I'm assuming that you are referring to transformational learning as defined similarly by both Brookfield (2005) and Mezirow (1994). Although time and money help make 'transformation' possible, appropriate culture and leadership are the more critical ingredients (Fullan, 2006; Fullan, 2005; Fullan 2001; Moss-Kanter, 2001; Senge, 1996). You can throw as much time and money at the people of an organization as you like but if the necessary culture and leadership are absent, change of the transformational variety is impossible let alone sustainable.
	Convergence-within a single message	
	Connecting ideas, synthesis	
	Creating Solutions	
Resolution (RES)	Vicarious application to real world testing solutions	I have noticed that by editing writing together on a projector, the students are engaged and involved in the process. We had a problem at school about students' ….. To solve this problem we developed …. And it worked, the students .....
	Defending solutions	

Table 15 Comparison of Coding Results for Cognitive Presence within Three Time Periods

COGNITIVE PRESENCE	First 3 weeks of Discussion		Second 3 weeks of discussion		Last 3 weeks of discussion		TOTAL	
	Online	*Blended*	*Online*	*Blended*	*Online*	*Blended*	*Online*	*Blended*
Triggering Event	15 %	2 %	7 %	5 %	8 %	5 %	**10 %**	**4 %**
Exploration	18 %	16 %	30 %	16 %	27 %	10 %	**25 %**	**14 %**
Integration	47 %	55 %	45 %	43 %	52 %	57 %	**48 %**	**52 %**
Resolution	7 %	6 %	10 %	8 %	6 %	4 %	**7 %**	**6 %**
No category detected	14 %	21 %	9 %	28 %	8 %	23 %	10 %	24 %

Independent samples "t-tests" were conducted in order to explore whether there were any statistical differences between the online and blended courses in terms of cognitive presence posting patterns. As seen in Table 16, the exploration ($t(26)=3.125$, $p=.004$) and integration ($t(25)=-3.136$, $p=.004$) categories were found to be significantly different across the courses. As mean values for these categories indicated, the level of exploration decreased while the level of integration increased in the blended course. Figure 5 illuminates the differences between the two courses for each category. In terms of the triggering event category, there were no statistically significant differences between the courses, although the mean value in the blended course was lower.

Table 16 Independent t-test Results for Cognitive Presence

COGNITIVE PRESENCE	**Online Course**	**Blended Course**			
	Mean	**Mean**	**t**	**df**	**p**
Triggering Event	5.64	2.37	1.811	26	.082
Exploration	22.97	12.73	3.125	26	.004
Integration	48.76	64.14	-3.136	26	.004
Resolution	7.37	8.72	.561	26	.580

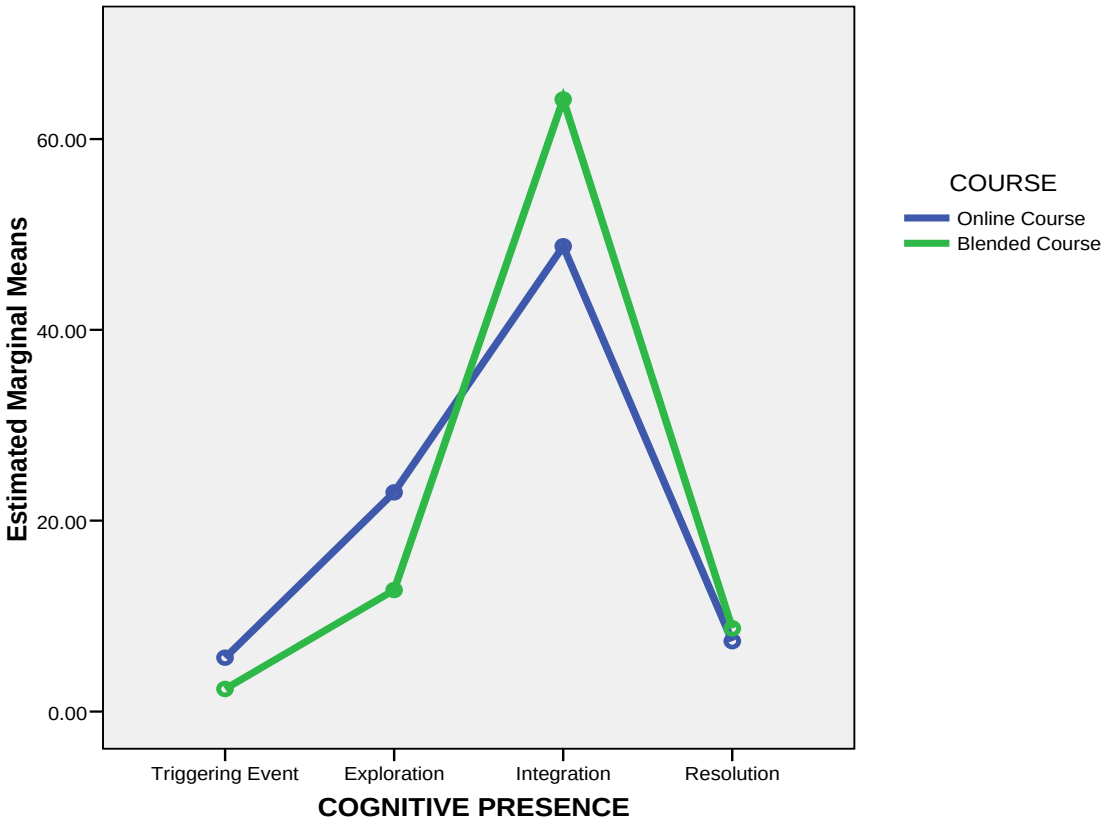

Figure 5 Scatter Plot of Cognitive Presence in Online and Blended Courses

Due to the small sample size, the Mann Whitney U test was also conducted to compare the differences on cognitive presence categories. As seen in Table 17, the results of the test were consistent with the independent "t-test" results for the categories of exploration (p=.003) and integration (p=.009). However, the test also indicated significant differences for the triggering event category (p=.039).

Table 17 Mann-Whitney U test Results for Cognitive Presence

COGNITIVE PRESENCE	**Online Course**	**Blended Course**		
	Mean Rank	**Mean Rank**	**U**	**p**
Triggering Event	17.28	10.79	51.500	.039
Exploration	18.44	9.25	33.00	.003
Integration	11.00	19.17	40.00	.009
Resolution	13.84	15.38	85.500	.625

4.4.4 Development of Community of Inquiry

Using the posting patterns of each presence, a scatter plot was applied to illustrate how the community of inquiry as a whole developed in each course (Figure 6). As seen in Figure 6, each element of the CoI developed similarly in both courses. Independent "t-tests" and Mann Whitney U tests were also conducted to assess whether there were any statistically significant differences on social presence, cognitive presence and teaching presence. None of the tests yielded a significant difference on the CoI elements across the courses (Table 18 and Table 19). As a result, the state of the CoI as measured by the three presences is similar in both courses.

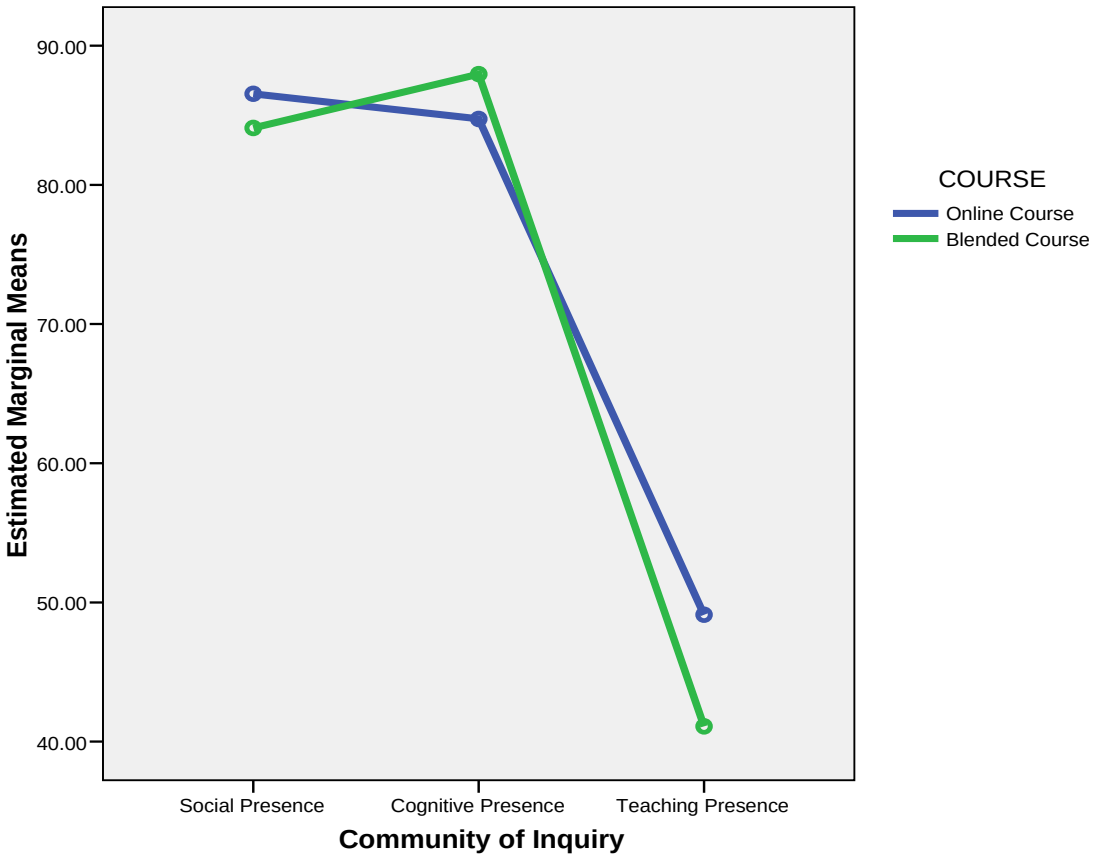

Figure 6 Scatter Plot of Community of Inquiry Elements in Online and Blended Courses

Table 18 Independent t-test Results for Community of Inquiry Elements

COMMUNITY OF INQUIRY	**Online Course**	**Blended Course**			
	Mean	**Mean**	**t**	**df**	**p**
Social Presence	86.54	84.08	-.861	26	.397
Cognitive Presence	84.74	87.96	.538	26	.595
Teaching Presence	49.11	41.10	1.411	26	.170

Table 19 Mann-Whitney U test Results for Community of Inquiry Elements

COMMUNITY OF INQUIRY	**Online Course**	**Blended Course**		
	Mean Rank	**Mean Rank**	**U**	**p**
Social Presence	13.50	15.83	80.000	.458
Cognitive Presence	16.25	12.17	68.000	.193
Teaching Presence	16.69	11.58	61.000	.104

4.5 Students' Perceptions of Community of Inquiry

In this section, students' perceptions of social presence, cognitive presence and teaching presence are presented using the CoI Survey results and interview results.

4.5.1 Overall Perceptions of the Community of Inquiry

4.5.1.1 CoI Survey Results

The descriptive statistics were examined to map data patterns and compute an average score for each presence. To represent students' perceived level of each presence, the mean responses to the questions of each presence in the survey were calculated. The analysis showed that students had high perceptions of each presence in both courses (See Table 20). However, as seen in Table 20, the students in the blended course have slightly higher perceptions compared to the students in the online course.

Table 20 Students' Perceptions of CoI Elements in both Courses

	Online Course		Blended Course	
	N	Mean	N	Mean
Social Presence	15	3.94	12	4.30
Teaching Presence	15	4.15	12	4.51
Cognitive Presence	15	4.07	12	4.31

In order to explore whether the differences on perceptions were statistically significant according to the course design (i.e., online or blended), independent "t-test" samples were conducted. As seen in Table 21, the results were not significant for social presence (p=.090) and cognitive presence (p=.209). However, the test yielded a significant difference for teaching presence (t(25)=-2.131, p=.043). As the mean values indicated, students in the blended course perceived teaching presence more than the students in the online course.

Table 21 Independent t-test Results for Perceptions of CoI Elements

	Online Course	**Blended Course**			
	Mean	**Mean**	**t**	**df**	**p**
Social Presence	3.94	4.30	-1.764	25	.090
Teaching Presence	4.15	4.51	-2.131	25	.043
Cognitive Presence	4.07	4.31	-1.288	25	.209

Due to the small sample size, the Mann Whitney U test was also conducted to compare the differences. As seen in Table 22, the results were consistent with the "t-test" results; that is, there were no a statistically significant differences on social presence (p=.059) and cognitive presence (p=.178) between the online and blended courses. Consistent

with the "t-test" results, the Mann-Whitney U test showed a statistically significant difference on the perceptions of teaching presence (U=47.500, p=.037). Although both tests did not indicate a statistically significant difference for social presence, the mean values showed that students' perceptions of social presence were higher in the blended course than in the online course.

Table 22 Mann Whitney U test Results for Perceptions of CoI Elements

	Online Course	**Blended Course**		
	Mean Rank	**Mean Rank**	**U**	**p**
Social Presence	11.43	17.21	51.500	.059
Teaching Presence	11.17	17.54	47.500	.037
Cognitive Presence	12.17	16.29	62.500	.178

There were four open-ended questions in the survey. Twelve students in the online course and nine students in the blended course responded to the open-ended questions. Overall students' responses to a community of inquiry approach in both courses were positive. While there were differing views about which aspects of a community of inquiry affected their learning and satisfaction, generally the students valued the approach and expressed their satisfaction within the course. The students in both courses indicated that it was particularly powerful for participation. One student in the online course indicated that he felt greater comfort in participating in course discussions. Another student compared the sense of community to studying individually such as reading course resources and sending in assignments in response, and stated that "*the difference is, I've gotten to know the teacher and some of the students. I know that if I learn something I will be able to share it.*" Only one student in the blended course stated that she did not sense a community of inquiry and noted low attendance as the reason. Three students in the online course expressed that they did sense a community of inquiry but in different manners and levels. For example, two of them stated that they did not think

that the community of inquiry included all class members and another one expressed that he did not sense a community of inquiry on the discussion board.

With regard to the CoI as a whole and its impact, only five students (three from the blended course, two from the online course) indicated that all three presences were important to achieve meaningful learning. One student in the online course indicated that all these presences kept him hooked into the course. Moreover, some of them in both courses also stated that the CoI framework increased awareness in their own teaching and learning and caused them to evaluate and improve their teaching.

4.5.1.2 Interview Results

The main question asked to students was how they felt about the community of inquiry that was developed during the course of studies. The responses of the students to this question differed in each course. The students in the blended course believed that a community of inquiry did develop during the course. Only one student indicated that the community did not develop for her because she did not attend many classes. The other students expressed that they felt the existence of all three presences. One student said "*we definitely developed the three different presences... I definitely saw the community of inquiry framework developed in practicality right in our course.*" Some students also indicated that the face-to-face component of the blended course helped the development of a community of inquiry.

On the other hand, the students in the online course sensed the community of inquiry in different ways and levels. Only four students stated that they thought the community of inquiry developed fully in the course. On the other hand, seven students indicated that it did develop but not completely; apparently their perception changed over time. For example, one student indicated that he sensed the community of inquiry developed at the beginning but as he could not perceive as much teaching presence as at the beginning of the term, his sense of community of inquiry diminished. Two students indicated that the community of inquiry developed to some extent but that they could not reach the highest level of cognitive presence. Another student indicated that the community developed within a core group rather than the entire classroom. He said "*there is definitely a community there, but I do not think that it is entire class. I think there is a core group community. They tend to be the people who answer things right away, and those perhaps can not answer right away if you really shout out.*"

Students' responses to the question about their perception of a CoI also highlighted the fact that each element of the CoI framework is integrated in such a way that their perception of one element directly influences their perception of the whole CoI. When students sensed all three presences at a sufficient level, they were more inclined to believe that a CoI had developed in the course. For example, the students in the blended course emphasized the existence of all three presences when mentioning the development of a CoI. On the other hand, the students in the online course indicated that the CoI did not develop sufficiently when they did not feel sufficient teaching presence, if they did not sense social presence, or if they did not think they could reach higher levels of critical thinking.

The instructor was asked why he applied a CoI approach in the course. The instructor indicated that the CoI approach worked well in the course. According to the instructor "*it is important to be able to ask good questions and to go through the practical inquiry model in order to reach resolution.*" The instructor explained that adding an inquiry based approach to learning helps students ask questions about redesigning a course or program. Also, he indicated that a CoI enables moving between public and private world by providing different forms of communication so that the students do not feel alone during the inquiry process. The course instructor was asked whether he found differences between online and blended communities of inquiry developed in the online and blended courses. Generally, the instructor was satisfied with both communities of inquiry. The only difference that he found from his perspective was that the increased opportunity for synchronous meetings in blended course made it possible for him to get to know students better and to check their progression more easily. He indicated that he could see "A-ha" moments; he could see the students encouraging and contributing to each other during the synchronous discussions in blended course.

4.5.2 Social Presence

4.5.2.1 CoI Survey Results

The descriptive analysis of social presence items in the CoI survey showed that the students in each course perceived higher social presence in some aspects and less in others. As seen in Table 23, the items indicating social presence related to participation in online discussion were perceived highest in both courses. However, the item "I felt

comfortable interacting with other course participants" was perceived highest in the blended course whereas it was perceived lower in the online course.

Table 23 The Means of Social Presence Items in Online and Blended Course

SOCIAL PRESENCE		ONLINE COURSE		BLENDED COURSE	
		Mean	**Std. Deviation**	**Mean**	**Std. Deviation**
Affective Expression	Getting to know other course participants gave me a sense of belonging in the course	3.6667	.81650	4.3333	.88763
	I was able to form distinct impressions of some course participants	3.7333	.59362	4.1667	.57735
	Online or web-based communication is an excellent medium for social interaction	3.7333	1.03280	3.5833	.79296
Open communication	I felt comfortable conversing through the online medium	4.4000	.50709	4.6667	.49237
	I felt comfortable participating in the course discussions	4.2857	.72627	4.5833	.66856
	I felt comfortable interacting with other course participants	3.8667	.99043	4.7500	.62158
Group cohesion	I felt comfortable disagreeing with other course participants while still maintaining a sense of trust	4.0667	.59362	4.1667	.71774
	I felt that my point of view was acknowledged by other course participants	4.0000	.84515	4.5000	.67420
	Online discussions help me to develop a sense of collaboration	3.7143	1.13873	3.9167	.66856

The analysis of open-ended questions in CoI Survey revealed that students in the blended course sensed social presence more compared to online course students,

probably due to the face-to-face component of the blended format. Only one student in the blended course indicated that she could not sense social presence as she could not attend many courses. Most of the students indicated that social presence encouraged them to participate. One student also pointed out that it increased satisfaction. Another student's statement was "*the social presence encouraged me to respond to class mates' topics, provide resources that might be helpful, and consider different points of view.*" It was also stated by a student that she did not find social presence in online discussions as strong as in face-to-face meetings. Moreover, two other students indicated that the face-to-face component of the course helped to develop social presence.

In the online course, a few students commented on social presence. Similar to blended course students, they indicated the impact of social presence to encourage participation. One student also stated he found it easy to disagree with others when he felt social presence. Three students indicated that they did not feel any social presence. They indicated that being shy to communicate or less interactivity among students were reasons. One of them stated that although he found social presence strong in the online discussions, he did not feel confident to contribute social presence within the online discussions. Another student emphasized that course design enhanced social presence such that he could find ways to communicate with others through means such as student home pages.

4.5.2.2 Interview Results

Students' perception of social presence varied in both courses. In the online course, although most students expressed that social presence developed in the course, there were four students who indicated that social presence was high for some of their classmates and low for others. One student assessed the course as lacking social presence and another as low social presence. Some students indicated social presence as an important factor for their satisfaction and learning, while others indicated it did not influence their learning or satisfaction at all. In the blended course most of the students were satisfied with the level of social presence; however, some students perceived social presence differently in the face-to-face and online part of the course. They indicated that social presence was higher in class compared to the discussion board.

Generally, the students in both courses indicated that social presence created a comfortable environment to share ideas, express views and collaborate. One student

from the blended course said: *"Social presence increases your comfort level when you really speak out and talk. You are more inclined to be sort of honest, straightforward and honestly who you are rather than trying to think about what other people might be thinking of you. You are more comfortable and so being more comfortable you definitely want to share more ideas and express view points.*" Another student from online course emphasized respect and trust as key factors for social presence to provide a climate where people are willing to put themselves out there, willing to give their opinions, or willing to take criticism. He stated that in this course they could create a good climate in which the students respected and trusted each other and, thereby, felt comfortable discussing issues. One student expressed that the social atmosphere was very supportive based on his experience in this course and previous experiences. He said: "*I find it surprising, how supportive; I do not know who started that culture or where it comes from, or if that is deliberate or that is just the way it is, the people say very warm thing and they really restrain themselves from saying anything negative. They say 'That was a really good post' or 'I really liked what you had to say'. The worst thing they do if I say something really stupid is ignore it. I do not know why that is, but it is very warm and I always think very well of all the people with me.*"

Eleven students (eight from the online course and three from the blended course) suggested a relationship between class size and social presence. Three students pointed out that class size was an influential factor for social presence. Two students expressed that social presence was better in small groups. One student stated that social presence came out of peer reviews as it provided opportunity to get to know each other. One student emphasized the fact that class size was too big for social presence to develop. One student stated that he thought social presence was fine in small groups; however, for the entire class he found the social presence of some students too much. He said "*there are some people that are omnipresent really and other people that are hardly present. I think that makes it difficult for social dynamics.*"

Consistent with this, the students in the blended course were pleased with the class size. They indicated that small class size decreased the amount of time necessary for the development of social presence. They stated that it was easy and fast to get to know each other. Two students in the blended course also indicated that meeting in informal settings apart from the regular class also helped the development of social presence. Another student also indicated time consuming assignments was a barrier for social

presence and he said "*the social presence in this course, at least for me, was not great and I could probably try harder but I had no energy to put into social presence so that people would feel comfortable for me*." Not attending the course was also pointed out as a factor by one student in the blended course who was the only student that did not perceive much social presence. She also said that there could be more social presence if they had more group projects. Three students from the blended course and one student from the online course emphasized the role of teaching presence for setting up social presence at the beginning of the course. One student said: "*I think it was the instructor at the beginning sort of trying to make the connections and be friendly and keep everything going*."

The instructor indicated that, generally he could not see a big difference in terms of social presence; however, he did perceive different forms of social presence in each course. He stated that as most of the students in the blended course were new in the graduate program, they were more willing to build social networks and more keen to make friends compared to some students in the online course who were more in a finishing mode. Also, in the blended course the instructor indicated that there was more togetherness as they had regular synchronous meetings.

4.5.3 Teaching Presence

4.5.3.1 CoI Survey Results

Overall, the students in both courses perceived all teaching presence survey items high. However, the differences on perceptions mostly appeared to be on facilitating discourse category of teaching presence. Generally, the students in the online course perceived facilitating discourse lower compared to the students in the blended course (see Table 24). The lowest perceived aspect of the facilitating discourse category in both courses was the item "The instructor was helpful in identifying areas of agreement and disagreement on course topics that helped me to learn". An important difference between the perceptions of students in each course is on the item "The instructor helped to keep course participants engaged and participating in productive dialogue," which is about the facilitating discourse category of teaching presence. The students in the blended course perceived this item higher than the students in the online course.

Table 24 The Means of Teaching Presence Items in Online and Blended Course.

TEACHING PRESENCE		ONLINE COURSE		BLENDED COURSE	
		Mean	Std. Deviation	Mean	Std. Deviation
Design and Organization	The instructor clearly communicated important course topics	4.5333	.63994	4.7500	.45227
	The instructor clearly communicated important course goals	4.7143	.46881	4.8333	.38925
	The instructor provided clear instructions on how to participate in course learning activities	4.3333	.72375	4.5833	.51493
	The instructor clearly communicated important due dates/time frames for learning activities	4.7333	.45774	4.8333	.38925
Facilitating Discourse	The instructor was helpful in identifying areas of agreement and disagreement on course topics that helped me to learn	3.6667	.89974	3.8333	.71774
	The instructor was helpful in guiding the class towards understanding course topics in a way that helped me clarify my thinking	4.0769	.75955	4.6667	.49237
	The instructor helped to keep course participants engaged and participating in productive dialogue	3.5333	.99043	4.5000	.52223
	The instructor helped keep the course participants on task in a way that helped me to learn	3.6667	.97590	4.2500	.45227
	The instructor encouraged course participants to explore new concepts in this course	4.0000	.84515	4.1667	.71774
	Instructor actions reinforced the development of a sense of community among course participants	4.4000	.73679	4.7500	.45227
Direct Instruction	The instructor helped to focus discussion on relevant issues in a way that helped me	3.8000	.77460	4.3333	.49237
	The instructor provided feedback that helped me understand my strengths and weaknesses relative to the course's goals and objectives	4.0000	.37796	4.4167	.51493
	The instructor provided feedback in a timely fashion	4.5333	.51640	4.7500	.45227

In contrast to social presence, the analysis of open-ended questions revealed that teaching presence was emphasized more by the online course students as the frequency of teaching presence responses were greater compared to the other presences and compared to the blended course. In both courses the students were very positive about the instructor. They appreciated the instructor's being clear about course goals, assignments, grading, instructor's guidance, support, and frequent communication. Students indicated the role of teaching presence was to increase reflective thinking, to create opportunity to negotiate and learn from each other, and to lead to more responsibility. Seven students in the online course emphasized its role on their learning. Three students found teaching presence as the most important and critical, whereas two students indicated both teaching presence and cognitive presence are keys for their learning. From a satisfaction perspective, one student's statement about teaching presence was "*an instructor who has a strong presence and communicates effectively is a determining factor in whether or not I enjoy the course.*" Another student pointed to instructor involvement, providing triggers during the discussions, and relevant readings as influencing factors on learning. However, some students in the online course also indicated that they wanted to see the instructor's presence more on the discussion board.

4.5.3.2 Interview Results

Students in both courses generally indicated that they found teaching presence high and valuable. However, the students in the blended course perceived it as more group teaching presence compared to the students in the online course. They seemed to be more aware of their contribution to teaching presence by sharing the responsibilities of course instructor. One student in blended course stated there was more teacher presence at the beginning but then it quickly evolved into a group teaching presence. He said: "*I thought the teaching presence was excellent; it scaffolded nicely, grew and shared by everyone.... having that sort of teaching presence impacts the satisfaction tremendously.*" Similarly, another student expressed: "*I think all of us contributed to the teaching presence, our bringing expertise and insights from our world, so it promotes learning for everyone."* One student explained this from a different perspective in that the instructor provided excellent teaching presence without being teacher directive. The instructor also perceived high teaching presence in both courses. However, he also indicated that there was a lot of teaching presence going on

in the blended course during the face-to-face meetings. He stated that he observed students bringing resources such as curriculum materials, articles to the classroom, and scaffolding or supporting each other during discussions.

With regard to the instructor, the students appreciated frequent communication, immediate feedback, availability, good balance on course resources and activities, good facilitation, clarity on assignments and evaluation, correcting misunderstanding and modeling the use of tools. Some of the students also pointed out that they were impressed with the instructor's excellent teaching skills. One student stated that it was a hard act to follow him because he was an incredible role model. Some students also thought that the instructor was very helpful, attentive and respectful to everyone. Four students in the blended course also indicated that the course instructor modeled the application of blended learning very well. They thought that the instructor modeled espoused blended learning theory and this helped them to see all the opportunities and possibilities that they could adopt in their own teaching.

Seven students from the online course and four students from the blended course appreciated frequent communication and timely feedback from the instructor. One student from the online course indicated that getting immediate feedback from the instructor was critical in affecting her perception of teaching presence. Five students (two from the online course and three from the blended course) also valued the instructor's availability and offered virtual office hours on a regular basis. One student from the blended course emphasized that there were many ways to reach the instructor such as via email, Elluminate, or phone. Another student from the online course indicated that virtual office hours increased her sense of teaching presence compared to other courses she had before. Finally, a student stated that the virtual office hours were a great idea because it enabled them to sense the presence of the instructor, although the instructor did not talk every week and it filled the gaps when they could not establish a connection to the instructor.

The resources provided by the instructor were assessed as balanced by some students in both courses. They stated that the readings were relevant and did not overload them. One student from the blended course also indicated that there was a good balance between discussions and other assignments in the course. Only one student from the online course indicated that the workload was heavy, which sometimes negatively

influenced his sense of teaching presence or social presence as he did not have enough time to think about these. Two students in the online course also noted the value of providing samples from previous students in understanding what they were expected to do.

With regard to three dimensions of teaching presence, the results revealed that students sensed teaching presence mostly in terms of design and organization and facilitation of discourse. High teaching presence on design and organization of the course also helped students to resolve some of their questions or concerns at the beginning of the course. In the online course, based on his experience as an online student, one student explained that it is very important to make sure that students have a clear understanding in terms of expectations and guidelines when designing or facilitating an online course. Another student said "*it looked like everything was clear upfront, all the assignments and the information about assignments was there. So it is good, it releases my stress, if I can see what I have got ahead of me.*" Students in the blended course also indicated that the course was well designed and organized and they also valued the instructor providing the agenda every week to remind them of events and to-do lists. One student said: "*I need the structure of having good teaching presence. I am not great if you leave me to my own devices. He was so clear what to do each week, very clear what the goals were and how to go about doing the things we needed to get done, so for me it really helps me to get through the course."*

Although the students interviewed were generally satisfied with the teaching presence, most of the students from the online course (eight students) and four students from the blended course also indicated that they could not see much teaching presence on the discussion board. For the students in the online course the absence of teaching presence in the weekly discussions resulted in a need for more direct instruction but this was not the case for the students in the blended course. One student specifically emphasized that not seeing the teacher on the discussion board was not a problem by expressing "*he was there sometimes, some weeks not at all and that was not a problem at all. I thought that was fine because we saw him every week in class and he also communicated with us a lot through email."* Another student assessed the instructor's teaching presence as not overly powerful but reasonable.

On the other hand, the students in the online course expressed their need to have direct instruction from the instructor. One student stated that the instructor had a lot of

knowledge and experience about blended learning; therefore, he wanted more direct transfer of knowledge. Another student emphasized the need for instructor guidance within the discussions and said "*there was not any guidance in terms of important information that we should gleaning from course and I think it helps me organize my learning so that it was an important fact keeping me on task."* One student stated that he could not see a strong teaching presence on Blackboard but he thought that the Elluminate sessions were great as the students were exposed to the instructor plenty through the Elluminate sessions. Another student also expressed that virtual office hours were good to fill in the gaps when they could not establish a connection with the instructor. The instructor was asked during the interview about students' need for more instructor presence on the discussion board. He stated that he could understand the point as the discussion board was the main medium the students could sense his presence. He also assessed it as a valid point because "*in order to be a community of inquiry, the teacher has to be there as well; not as a leadership role but to make the students feel that the teacher is also involved*." He also indicated that this was more problematic for the new students who had less experience in online learning environments or in graduate program.

The course design provided opportunities for students to share teaching presence by allowing them to lead and facilitate weekly discussions. In the online course, some students found this valuable where others found it difficult. The student who found the distribution of teaching presence among students difficult further explained that he could not interpret what others said as he did not know or could not meet them in person. He said "*if the instructors comes to the class and say 'you should do this, you should try this', most students have a tendency to take, to trust and believe he knows what he is talking about*." Another student indicated inconsistency in terms of course outcomes when different students facilitate the discussions every week. She stated that the outcomes for the discussions changed each time as the discussions focused on whatever the students come up with for the week. On the other hand, three students appreciated this strategy as it provided a new way to participate and contribute. One student stated that he enjoyed having a chance to facilitate the discussions and found it good in terms of his own metacognition and in terms of providing better understanding. Similarly, another student found this strategy a mirror to show the difficulty and importance of facilitation.

All the students in the blended course were very positive about sharing the responsibilities and roles of instructor. This also made them perceive the teaching presence as group *teaching* presence rather than *teacher* presence. Students thought that it was more teacher presence at the beginning which was helpful for them because the instructor modeled how to facilitate the discussions or use the tools, then it evolved into group teaching presence. Four of them found sharing the teaching experience richer as they had different backgrounds and more experiences. One student expressed this as such: "*You just get more perspective, we all came from different experiences, everyone has different background, different job descriptions, so it gave a different perspective on each content area, it just broadened the discussions, added to the course.*" Another student pointed out the fact that it increased participation. She said "*it was helpful for students to participate and learn from each other, there is a quite a bit dialogue and quite sharing the experiences which was a benefit too.*" The instructor also emphasized the role of social presence for the development of teaching presence. He said "*if it is a really true community, you are building that sense of trust and group cohesion, so they feel more comfortable not just sharing with each other but starting to mentoring and tutoring and teach each other.*"

4.5.4 Cognitive Presence

4.5.4.1 CoI Survey Results

Similar to the other presences, the descriptive analysis of cognitive presence items in CoI survey showed that the students in the blended course perceived each aspect of cognitive presence higher than the students in the online course (see Table 25). The biggest difference between the two courses is on the perception of item "Online discussions were valuable in helping me appreciate different perspectives" indicating that students in the blended course valued online discussions higher than the students in the online course.

Table 25 The Means of Cognitive Presence Items in Online and Blended Courses

COGNITIVE PRESENCE		ONLINE COURSE		BLENDED COURSE	
		Mean	Std. Deviation	Mean	Std. Deviation
Triggering Event	Problems posed increased my interest in course issues	3.9333	.70373	4.0000	.42640
	Course activities piqued my curiosity	4.1333	.74322	4.2500	.62158
	I felt motivated to explore content related questions	4.3333	.81650	4.3333	.65134
Exploration	I utilized a variety of information sources to explore problems posed in this course	4.0667	.88372	4.4167	.66856
	Brainstorming and finding relevant information helped me resolve content related questions	3.7857	.57893	3.9167	.66856
	Online discussions were valuable in helping me appreciate different perspectives	3.8667	.63994	4.4167	.66856
Integration	Combining new information helped me answer questions raised in course activities	4.0667	.79881	4.1667	.71774
	Learning activities helped me construct explanations/solutions	3.9333	.70373	4.3333	.49237
	Reflection on course content and discussions helped me understand fundamental concepts in this class	4.0000	.75593	4.4167	.51493
Resolution	I can describe ways to test and apply the knowledge created in this course	4.2667	.59362	4.2500	.45227
	I have developed solutions to course problems that can be applied in practice	4.1429	.86444	4.5000	.52223
	I can apply the knowledge created in this course to my work or other non-class related activities	4.4286	.85163	4.7500	.45227

The analysis of the open-ended questions revealed that students in both courses were satisfied with cognitive presence in the course. They emphasized the role of cognitive

presence on their learning as it created a deeper awareness, provided meaningful learning, and led to construct-based learning. Their responses also pointed out the importance of learning activities and resources to develop cognitive presence. They found assignments and the final project relevant, challenging, sufficient, and reflective. In terms of the discussion board, there were contrary views. While some students found it a good combination of social and teaching presence and a good opportunity to learn from each other, there were also some students who were not satisfied with the discussion board or stated that they were not so active. One student in the blended course indicated that she was not active on the discussion board as she preferred discussion in the face-to-face context. One student from the online course criticized discussions in the course such that he found them disjointed and the conversations or dialog did not always feel connected. Another student in the online course also indicated that the Blackboard course management system should be improved to increase cognitive presence.

4.5.4.2 Interview Results

Almost all students in both courses indicated that they perceived cognitive presence to be strong in the course. Moreover, two students found too much cognitive presence compared to the other presences. Three students stated that cognitive presence increased their awareness of their thinking process and made them sense progression. According to the instructor, there was also a very high level of cognitive presence in each course. The instructor stated that he was impressed with the level of online discussions and the quality of final papers in both course.

Students' comments about cognitive presence noted the importance of resources and learning activities in order to develop deep approaches to learning in both courses. The instructor also emphasized the role of learning activities. He said "*if you do not have the activities that are directed to push students intentionally through four phases of inquiry model, learning does not happen*". He stated that activities were designed to move students through the phases of practical inquiry, ultimately to take them through the redesign process, force them to make decisions, and apply what they were learning in the class. The students also appreciated the good balance of resources and content. They found course readings to be relevant, interesting, forcing them to think critically, and to do more research. For the assignments, the students in both courses found them challenging and supportive of

critical thinking and problem solving. One student criticized too much focus on social aspects in courses he took previously; he thought there was a danger to take away from really learning the subject. He said: *"…I think the cognitive presence comes down to what you actually do in terms of learning, in terms of projects and writings, and things like that. So I think it is very important to me that tasks should require some kind of critical thinking or problem solving. So I mean group work resulting relationships is good but there should be some goals that requires me to tackle a task or project.*"

With regard to online discussions, students' comments varied. Some students, especially the students who used the discussion board for the first time valued online discussion as it provided opportunities to see different perspectives. One student in the blended course stated that he enjoyed the discussion postings. He thought that the students all brought out a lot of good issues which made him think and, therefore, the discussion board definitely helped frame his thoughts. Another student from the online class said: "*I should say in discussion, people brought all sort of information that I had no idea about it.*" He also explained that he developed his own strategy to utilize the online discussions more effectively by copying and saving to his own files some of the discussions that he found useful. In both courses there were some students who indicated that they were not so active in the online discussion or they did not favor the discussion board generally. Four students in the blended course indicated that they were not active on the discussion board as much as they used to be in completely online courses. One of them said that: "*For me, the cognitive presence was more in class than it was online in comparison to the classes, that are completely online and obviously because there is no other presences. But I would say that because I felt that I had a place to speak people face-to-face, my posts were not necessarily deeper or more reflective.*" Another student commented that other students engaged more in online discussions by reflecting on readings and coming across new readings compared to her. She stated that she found it kind of repetitive; therefore, she preferred small group discussions as opposed to having everybody respond to the same question.

Related to the phases of cognitive presence, most of the students believed that they were able to reach the higher levels. However, most of them thought that the resolution phase will be achieved individually with their final project. One student from the online course stated that the course set the students up to have ability to reach the resolution phase. He said "*within the course the students were pretty close to resolution phase but the resolution*

phase definitely will be cemented when they actually implement course redesign projects." Two students in the blended course also indicated that triggering and exploration phases occurred during face-to-face sessions, whereas higher levels took place on the discussion board as they had more time to think about the issues.

Students in the online class also identified important factors affecting their cognitive presence in the course. Three students indicated the need for more time to reach higher levels of critical thinking in online discussions. One said: "*I think in the week period, typically people had time to explore the topic and form a few ideas, but I think within that time period it is difficult to really reach the final phase of inquiry.*" Another stated that one week passed so quickly and he suggested at least ten days for a discussion, or a decrease in the amount of discussion, to be more effective. The other student who also thought they could not reach the higher levels of cognitive presence pointed out the fact that some students only shared their opinions based on their experiences instead of linking their experiences to the literature so that the rest of the class could also connect and contribute at a higher level. Three other students also indicated the role of time on cognitive presence but from a different perspective. They emphasized being on time to post discussions for cognitive engagement; otherwise, they stated that most of the things they wanted to say had already been said which discouraged them.

4.6 Learning and Satisfaction

4.6.1 Perceived Learning and Satisfaction

The CoI Survey included two items for perceived learning and satisfaction. Descriptive analysis of these items revealed that the mean of students' responses to these items were high in both courses, indicating that students agreed that they learned much in the courses (Mean= 4.20 in online course, Mean= 4.58 in blended course) and overall they were satisfied with the courses (Mean=4.47 in online course, Mean=4.75 in blended course). Similar to the perceptions of CoI presences, students' perceptions of learning and satisfaction were also higher in the blended course than in the online course. The independent "t-test" and Mann-Whitney U test were conducted to explore whether these differences were statistically significant. As seen in Table 26, the "t-test" did not yield a significant difference between the online and blended courses in terms of students' perceived learning (p=.154) and satisfaction (p=.207). The results of Mann-

Whitney U test were consistent with the "t-test" results that did not reveal any statistically significant differences between the two courses for perceived learning (p=.166) and satisfaction (p=.225) (see Table 27).

Table 26 Independent t tests Results for Perceptions of Learning and Satisfaction in both Courses

	Online Course	**Blended Course**			
	Mean	**Mean**	**t**	**df**	**P**
Perceived Learning	4.20	4.58	-1.471	25	.154
Satisfaction	4.47	4.75	-1.295	25	.207

Table 27 Mann Whitney U test Results for Perceptions of Learning and Satisfaction in both Courses

	Online Course	**Blended Course**		
	Mean Rank	**Mean Rank**	**U**	**p**
Perceived Learning	12.33	16.08	65.000	.166
Satisfaction	12.60	15.75	69.000	.225

4.6.2 Students' Grades

Students' grades were used to provide detailed information about students' learning. Students' grades were comprised of their activities on the discussion board (25%), article critique assignment (25%) and course redesign project (50%). On a 100 point scale, the mean of students' grades were 94.22 in the online course and 98.83 in the blended course (see Table 28). An independent "t-test" and the Mann-Whitney U test were conducted to explore whether there was any statistical difference on students' grades

between the online and blended courses. As seen in Table 29 and Table 30, the results of both tests did not indicate a significant difference.

Table 28 Students' Grades in both Courses

	N	Mean
Online course	16	94.22
Blended Course	12	93.83

Table 29 Independent t test Results for Students' Grades in both Courses

	Online Course	Blended Course			
	Mean	Mean	t	df	P
Grade	94.22	93.83	.306	26	.762

Table 30 Mann-Whitney U test Results for Students' Grades in both Courses

	Online Course	Blended Course		
	Mean Rank	Mean Rank	U	p
Grade	15.59	13.04	78.500	.413

4.6.3 Relationships among CoI Presences, Learning and Satisfaction

The Spearman Rank Correlation Coefficient was conducted in order to explore the relationships among variables (teaching presence, cognitive presence, social presence,

learning and satisfaction) in each course. For the online course, the analysis revealed significant relationships among perceived learning, satisfaction, perceived level of teaching presence, social presence, and cognitive presence. As shown in Table 31, the correlation coefficient presented a positively significant relationship between teaching presence and cognitive presence (r=.78, p=.001); between teaching presence and learning (r=.55, p=.03); and between teaching presence and satisfaction (r=.63, p=.01). This indicates that students who perceived higher level of teaching presence also perceived higher levels of cognitive presence, learning and satisfaction.

Table 31 Relationships among Teaching Presence, Social Presence, Cognitive Presence, Perceived Learning and Satisfaction in the Online Course

Correlations

			Teaching Presence	Social Presence	Cognitive Presence	Perceived Learning	Satisfaction
Spearman's rho	Teaching Presence	Correlation Coefficie	1.000	.182	.779**	.548*	.634*
		Sig. (2-tailed)	.	.517	.001	.034	.011
		N	15	15	15	15	15
	Social Presence	Correlation Coefficie	.182	1.000	.490	.463	.539*
		Sig. (2-tailed)	.517	.	.064	.082	.038
		N	15	15	15	15	15
	Cognitive Presence	Correlation Coefficie	.779**	.490	1.000	.666**	.650**
		Sig. (2-tailed)	.001	.064	.	.007	.009
		N	15	15	15	15	15
	Perceived Learning	Correlation Coefficie	.548*	.463	.666**	1.000	.504
		Sig. (2-tailed)	.034	.082	.007	.	.055
		N	15	15	15	15	15
	Satisfaction	Correlation Coefficie	.634*	.539*	.650**	.504	1.000
		Sig. (2-tailed)	.011	.038	.009	.055	.
		N	15	15	15	15	15

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

The correlation coefficient also found significant relationships between cognitive presence and learning (r=.67, p=.007) and between cognitive presence and satisfaction (r=.65, p=.009). This indicates that students who perceived higher levels of cognitive presence in the course also perceived higher levels of learning and satisfaction. The analysis did not find a significant relationship between social presence and learning, but found a significant relationship between social presence and satisfaction (r=.54, p=038).

Overall, it was found that all three presences would appear to affect students' satisfaction, but only two presences (teaching and cognitive presence) have an effect on perceived learning. The interpretation is that teaching and cognitive presence (not social presence) have a direct effect on perceived learning.

For both courses, the most stable element is cognitive presence in terms of its effect on perceived learning and satisfaction. As seen in Table 32, the correlation coefficient presented a positively significant relationship between cognitive presence and teaching presence (r=.72, p=.009), between cognitive presence and learning (r=.81, p=.001), and between cognitive presence and satisfaction (r=.64, p=.024) in the blended course. This would seem to indicate that students who perceived higher levels of cognitive presence also perceive higher levels of teaching presence, perceived learning and satisfaction. Teaching presence in the blended course was found to be significantly related to satisfaction (r=.62, p=.03), social presence (r=.69, p=013) and cognitive presence, but not with perceived learning (r=.49, p=.099). With regard to social presence, the analysis did not yield a significant relationship with satisfaction and perceived learning. However, students who perceive teaching presence highly also perceived social presence highly. In contrast with the online course, there is a significant relationship between perceived learning and satisfaction in the blended course, which indicates students who perceive higher levels of learning are more satisfied with the course.

Table 32 Relationships among Teaching Presence, Social Presence, Cognitive Presence, Perceived Learning and Satisfaction in Blended Course

Correlations

			Teaching Presence	Social Presence	Cognitive Presence	Perceived Learning	Satisfaction
Spearman's rh	Teaching Presence	Correlation Coefficie	1,000	,691*	,716**	,498	,624*
		Sig. (2-tailed)	.	,013	,009	,099	,030
		N	12	12	12	12	12
	Social Presence	Correlation Coefficie	,691*	1,000	,420	,275	,313
		Sig. (2-tailed)	,013	.	,174	,388	,322
		N	12	12	12	12	12
	Cognitive Presence	Correlation Coefficie	,716**	,420	1,000	,811**	,643*
		Sig. (2-tailed)	,009	,174	.	,001	,024
		N	12	12	12	12	12
	Perceived Learning	Correlation Coefficie	,498	,275	,811**	1,000	,683*
		Sig. (2-tailed)	,099	,388	,001	.	,014
		N	12	12	12	12	12
	Satisfaction	Correlation Coefficie	,624*	,313	,643*	,683*	1,000
		Sig. (2-tailed)	,030	,322	,024	,014	.
		N	12	12	12	12	12

*. Correlation is significant at the 0.05 level (2-tailed).

**. Correlation is significant at the 0.01 level (2-tailed).

4.6.4 Interview Results

During the interviews, students were asked the impact of each presence on their learning and satisfaction. The responses of students indicated that each presence has different levels of impact on their perceived learning and satisfaction depending on their previous experiences, learning styles or personalities. For some students, all three presences were important for learning, whereas some students indicated one or two presences were essential for their learning and satisfaction. For example, based on her previous online course experience, one student from the blended course stated that she could not think of the presences separately in terms of their effect on learning and said "*if one of those presences is missing, you do not get the same degree of inquiry.*"

In the online course, the students who have more experiences in online learning seemed to be more comfortable with all three presences in the course. They generally did not perceive all three elements of the CoI as strong determinants for their learning and satisfaction. For example, the students who had several online/blended course

experiences emphasized teaching and cognitive presence more than social presence in terms their learning or satisfaction.

Most of the students in both courses commented on the important role of cognitive presence on their learning. One student stated; "*the cognitive presence was probably the best part, because the way the course was structured and designed, I felt like I was actually constructing my knowledge of blended learning as I was going through the course.*" Another student found cognitive presence to be the most interesting of the three presences and said he felt being challenged in different ways. One student described cognitive presence as the challenging and intellectual content of the course. He also felt most satisfaction in terms of cognitive presence.

With regard to the role of teaching presence in terms of perceived learning and satisfaction, most of the students in both courses emphasized that teaching presence was very important and valuable. One student stated that when the instructor was present, it definitely helped his learning because, as an expert in the area of blended learning, the instructor's presence let him know whether he was on the right track in terms of understanding the material. One student stated that the instructor was fabulous in addressing concerns and questions, so having the support and approachability of the instructor made it easy for him to improve/develop his own thinking. Another student also valued the instructor providing more resources and providing directions whenever she came up with a question. She stated that what made the course most successful was the instructor. The correlation analysis yielded consistent results with interview results for the online course about the role of teaching presence on learning, but there was not a direct relationship found between teaching presence and learning in the blended course. The course instructor was asked about this result during the interview. The instructor's response highlighted the fact that teaching presence was distributed between face-to-face and online parts of the blended course. He stated that the link between teaching presence and learning was taking place in their classroom conversation.

Students' comments also varied in terms of the impact of social presence on their learning and satisfaction. For the students in the blended course, social presence was more important for their learning compared to most of the students in the online course. The students who thought social presence affected their learning positively expressed an indirect impact. For example one student in the blended course said: "*We*

learn more when we feel presence because social presence creates an atmosphere where people want to be a social being not just that they are filling their heads with knowledge." Another pointed out the effect of enjoyment on learning and said "*it makes the class more enjoyable and of course when you enjoy what you are doing, it is fun, it is not so hard to get through it so social presence really helps.*" One of the students from the online course who indicated a positive effect on learning and satisfaction said "*for me, it has a big role, because if I can contact with, have connections with my fellow learners, I just feel more comfortable sharing knowledge with them and I just feel that it is a safer learning environment for me if I can get to know my fellow classmates.*" Another student emphasized the importance of social presence, especially for new comers to field. He said: "*I think what they would call social presence is extremely important for someone coming from the outside field of research... I find it difficult to read post by my classmates without knowing much about them as people, I really need to have a sense of who they are.*"

Most of the students in the online course (seven) and one student from the blended course indicated that social presence was not an important aspect compared to teaching presence or cognitive presence for their learning or satisfaction. They generally valued social presence but they did not find it a strong determinant for their learning. Two of them stated that social presence was not an important factor for their learning and satisfaction at all. One student who identified social presence as irrelevant in this kind of learning environment said: "… *I am not there to create a network or to meet other people; to get something very specific done, so my level of satisfaction is really negligible in this particular course."* Three of them emphasized the other two presences for their learning. One said "*social presence has none cognitive presence so it did not really affect my satisfaction because I guess, for me the most important thing whether that is right or not, is cognitive and teaching presence, if those things are lacking, it is kind of worse than lacking social presence.*"

4.7 Other issues and Factors

4.7.1 Attitudes towards Online and Blended Learning

The analysis of interviews found that most of the students have positive attitudes towards online and blended learning, the community of inquiry approach, and the course content. One of the questions asked students was whether there were any specific reasons to choose the course. Nine students from the online course and six students from the blended course indicated that the primary reason for choosing the

course was that the course topic was relevant and applicable to their context. Consistent with this, some were more explicit in expressing their need to learn how to apply blended learning for their job. The instructor also indicated that students' self-interest on the course topic had a positive impact on the learning process. The other most cited reason for choosing the online course (nine students) was convenience and access for distance students.

The interviews also revealed that most of the students have positive attitudes towards online learning and blended learning. In the online course, four students expressed that online learning worked well for them; they defined themselves as distance learners and proponents of online learning. One of them stated that he had no interest in face-to-face learning as he had done it before and online learning provided the needed flexibility. The students used the words such as "enjoyable", "worthwhile", "efficient", "flexible" and "convenient" when they expressed their thoughts and attitudes towards online learning during the interviews. Only one student stated that he missed face-to-face interaction based on the fact that he needed to know other students better to interpret what they were saying. He stated that he had a different background and he could not get to know the other students in a fully online course. For the blended course, all the students had positive attitudes toward blended learning. Four of them believed that face-to-face is an important component to increase the effectiveness. They stated that compared to online courses, the blended course increased the sense of community, made it feel more structured, and made students more comfortable for online discussion.

Students were also asked whether they had any concerns or questions about the course in terms of their learning and motivation at the beginning of the semester. Eight students (six from online course, two from blended course) indicated their concerns about the course topic such as adaptability or applicability of blended learning to their own contexts. The other concerns students had at the beginning of the semester were about contributing or adapting knowledge coming from a different field (two students from the online course), arranging time for discussions or synchronous meetings being in a different country (one student from the online course), understanding the terminology (one student from the blended course), level of technology use (one student from the blended course) and how a blended format would be different from online

format (one student from the blended course). All the students indicated that they could resolve their concerns quickly with support of the course instructor.

4.7.2 Learning Activities

Students in both courses provided insightful remarks on the role of learning activities in terms of their perceived learning and satisfaction during the interviews. They described learning activities by using the words such as "interesting", "challenging", "collaborative", "beneficial", "relevant", "engaging" and "real context." One student said: "*I often found the assignments the place for to get most out of them in terms of learning activities because that is where I can do most of my reflections and I learn by doing, by getting in there and working through the assignments so I learned most."* Students mostly valued group work (e.g., article critique) in the course as that was a good opportunity to learn from each other and to understand the material deeper. The instructor explained the dual purpose of the article critique assignment: to make the students get involved in the topic and start working together immediately. Based on his observations during synchronous meetings, the instructor also indicated that these kind of group works enhanced students understanding of the topic as they could see other points of view. One student's comment on group work was: "*The group work was really good, I really liked to work with the person that was in my group, and I thought that was valuable. It really helped me understand the article that I was reading and it helped me to learn from other peers as well."* Another student stated that she found the learning activities well done and a good balance between individual and group work. She said: "*I often found there is too much group work in the class and I chose online learning so I would not have to participate so much as a group, I want to do my own thing, so I really liked the balance in this class… some a little bit group work but also majority of things on your own.*" Most of the students in the online course also indicated a preference for increased group work when they provided their suggestions to increase the effectiveness of the course.

All the students interviewed had positive feelings about the course redesign project. They assessed the project as relevant, authentic, practical and challenging. One student stated that it was the synthesis, evaluation and practical summary of everything that went on in the class. One student expressed, "*the final project, the re-design project has been really good, because it is related to what I do right now, it helps me re-evaluate how we design a course, how we teach [a] course, how we assess students, how we evaluate a course… so the final project is great.*" Another student emphasized that the resolution phase was embedded in the final

project. She said: "*I was able to develop a prototype based on improving cognitive presence in my course and also my own understanding of how to deliver a blended course. That was actually reached resolution phase.*" The instructor also emphasized the final paper, he assessed the final paper as the true measure of cognitive presence and a concrete presentation of the students' thought process, how they internalized the knowledge, and how they put the plan together.

Using additional tools such as Wikis or blogs was also appreciated by some students. One student from the online course stated that the Wiki was a good idea to have all the weekly discussions in one area so he could always go back when needed. One student assessed use of wikis and blogs as a way to develop new skill sets rather than furthering his knowledge. Three students from the online course also valued having guest speakers. One commented "*that was fascinating for me and stimulated a lot of thoughts.*" Another indicated that it was very beneficial having people with similar concerns or interests in the field.

4.7.3 Contextual contingencies

Both the students' comments about their perceptions of the CoI and each presence during the interviews and their responses to open-ended questions in the CoI Survey identified barriers or limitations. In the online course, time was the main barrier identified. This was followed by class size, different background, and restriction on the mount of postings. In the blended course, different background, attendance and time were mentioned in terms of effecting the development of a community of inquiry.

With regard to time, eight students indicated that they needed more time for discussions. They believed one week was insufficient for effective discussions. One student's suggestion was: "*I think if the discussions had a longer time period, we had one week for each discussion, I think if it was two weeks, maybe there would be a longer time for us to bring out our own ideas, start sharing with each other and learning, maybe come up with some others, form ideas and understand a little bit better through some more discussions.*" Three students also emphasized time in terms of postings. Being late in postings was assessed as a barrier by these students for cognitive engagement. They explained that when they were late in postings, pretty much of everything they wanted to say had already been said. This made it difficult to become cognitively present. Three students also indicated that they did not have enough time this term as they were busy with their job. As such, they stated that

they could not do all the readings or be more active in discussions. One student said: "*It seemed like this was one of those courses where the timing was always 100% wrong whenever something is due when I had a book for other things on the ground. So it seems I was always the last person in that makes me hard to get motivated, distracting me a little bit.*" Two students from the blended course also indicated that they were busy so they did not have enough time for online discussions to reach higher levels of inquiry.

Class size is another barrier identified by five students in the online course for the development of a CoI, particularly social presence. The students indicated that they felt greater social presence in small group activities such as peer critiques. One student stated that he and his peers continued emailing afterwards and would discuss things not related to course topics. One student compared this course with another course she had before in terms of class size effect on a community of inquiry and said: "…*Community of Inquiry was much more solidified early in the course, I can say, it was a lot easier to follow the questions and the answers and the things like that. With the amount of people that we have now in the course, I find it a bit much."* On the other hand, four students in the blended course emphasized that the class size was very good for the development of a community of inquiry. They indicated that it was very easy to get to know each other. One student said, "*there were 12 of us, that was a great size, was not too big, but there was enough to generate the discussion.*"

With regard to different backgrounds as a barrier, four students (two from the online course and two from the blended course) indicated that it influenced their contribution or ability to follow the online discussions. One student said, "*the things I had to say maybe were not interesting for other people, so I've rather been unusual participant, I sort of felt like an outsider so the discussions, I do not think I made much of an impact on other people, I do not think I got as much from the discussions as from the other components of the course.*" Another student also stated that coming from a different field, she felt herself as being out of the loop and sometimes she found the online discussions hard to directly relate to her own area. Another student pointed out that she could not get much feedback from her friends as she thought the other students in the class had difficulty in understanding her as she was from a different area of study. However, three students in the blended course were very satisfied having people from different areas of study in the class. They thought that the range of experiences and backgrounds made the course more inclusive and increased the effectiveness of the online discussions.

With regard to restriction on the number of postings, one student indicated that it affected the development of social presence based on his previous experiences. He stated that social presence was as good as one could get in this course but in some courses students are not supposed to post trivial things. When they were supposed to post just one-page, he found social presence restricted. Attendance was indicated as an important factor by one student in the blended course. She stated that as she could not attend many classes, she could not sense social presence as much.

The instructor was also asked about the above contextual factors identified by students. The instructor also confirmed the influence of class size on the development of a community of inquiry. Based on his teaching experience, he stated that a class size between 10 and 15 is good for an effective community of inquiry. For time, the instructor stated that it would be nice to have two weeks for each discussion but he was not sure of effective use of extended time basing on his previous experience.

4.7.4 Suggestions

Students were asked whether they had any recommendations or suggestions in order to increase the effectiveness of the course during the interviews. Some students also offered some changes in their responses to open-ended questions in the survey. In the online course, the most cited recommendation by eight students during the interviews and three students who responded to the survey is more teaching presence on weekly discussions. One student stated that the best courses he had had the most active instructor, therefore he wanted to see more direct instruction from the instructor in the course. The second most cited recommendation by six students is the increase in group work because they thought that group work is engaging and collaborative, which provided opportunities to learn from each other. One student emphasized group work especially when the topic ventures into uncharted waters. For most of the students, this makes it easier to get engaged. Four students also indicated that they preferred to do the final project in groups. One of them suggested breaking the final project down into small parts as an alternative to group work so that students could deal with it throughout the term and could have an opportunity to get feedback or guidance for each part.

Three students suggested they have more time for discussion. One of them offered at least 10 days for a discussion or a decrease in the amount of discussion. One of the

students suggested a decrease in class size in order to follow the discussion and develop social presence more effectively. The other suggestions were to reduce the weighting for discussion assessment, provide more diverse resources according to students' contexts, and encourage students to incorporate their experience with literature to reach higher levels of thinking in discussions. Based on her previous experiences in online learning, one student also emphasized the importance of course design and organization and she suggested for any teacher or instructor of online courses to take some course design work. She stated that because of poorly designed courses she did not feel teaching presence, cognitive presence or social presence and her experiences were diminished. Students' responses to open-ended question also indicated that two students from the online course and two students from the blended course expressed their preference of limited online discussion.

In the blended course, students mostly stated that there was not much to add to increase the effectiveness. However, five of them offered minor changes. Three of the suggestions were about the discussion board. They offered structuring the discussions in a way to reach a conclusion. One of them also indicated that the dialogue among all participants should be encouraged as she thought that sometimes the dialogue occurred between specific people instead of the whole class. The other suggestions came from the blended course are enriching the content by adding other blended learning theories to the content, applying audio summary instead of wiki which enables students to learn the use of another tool, adding more asynchronous activities, and increasing the number of Elluminate meetings to save more time. One student also recommended a follow up course which students could take after they applied their course re-design projects. The instructor was also asked whether he was planning to change anything about course design in order to increase effectiveness. He mentioned three things to change: first, being more present when the course is given online; second, using audio feedback for assignments; and third, providing an opening thread for each student's redesign projects to get feedback from classmates. There is also one student from the blended course who suggested an increase in face-to-face meetings in his/her response to the survey.

Students were also asked whether they would recommend this course and take other online/blended courses in the future based on their experiences. All the students in both courses expressed that they would continue to take online or blended courses in

the future. In the online course, four students identified themselves as distance learners or a strong proponent of online learning; therefore, they would absolutely continue their education in online environments. In the blended course, five students indicated that they preferred the blended format to an online format as the face-to-face component was very important for them. Eighteen students in both courses stated that they would definitely suggest this course to others for the following reasons: 1) they learned a lot in the course; 2) they found the course interesting, valuable, worthwhile, well designed and well facilitated; and, 3) they thought the topic was important and worthwhile. Three students in the blended course stated that they already suggested the course to their fellow students. One of them stated he liked the course but he would recommend the blended version of the course instead of the online version to other students. Two students (one from the online course and one from the blended course) stated that they would recommend the course only if other students needed to learn the topic. Three students from the online course emphasized that others' abilities or willingness to learn online is also important before suggesting an online course because they thought that online learning might not work for everybody.

Finally, the instructor asked which course format he thought enhanced the development of a CoI. He replied a blended format because it provided more interactions as a result of having more regular synchronous meetings. The instructor was also asked which format he preferred; his answer was situational. He explained that there are other factors affecting students' motivation in each term. For example, he said that for spring term, students do not enjoy coming to campus, so it is better to make the course online. However, his preference was blended in a regular term although he thought a blended course increased work load and time for him.

4.8 Summary of Results

The purpose of this study was to examine the development of a CoI in online and blended learning contexts in relation to students' perceived learning and satisfaction. The data collected through transcript analysis of online discussion, the CoI Survey, and interviews was used to examine social, teaching, cognitive presence postings patterns, to explore students' perceptions of each presence, learning and satisfaction, and to compare the differences between online and blended learning environments.

Overall, all three sources of data indicated that a CoI developed in both courses. This result could be attributed to the success of course design in enabling the development of each presence. However, the study found developmental differences in the CoI presences regarding the course format. In terms of social presence, two categories – affective communication and group cohesion – were found different. The higher level of affective communication such as expression of emotions, use of humors and self disclosure was found in the online course whereas group cohesion category was significantly higher in the blended course. Also, it was found that group cohesion increased in the online course throughout the semester. Students in both courses valued social presence to create a comfortable environment to share ideas, express views and collaborate. They found the learning environment supportive and encouraging for participation. Apart from the course design, some contextual differences such as class size or participants characteristics were also found to be important factors for social presence. There were varying views about the impact of social presence on students' learning and satisfaction. The Spearman Rank Correlation Coefficient revealed that social presence was significantly related to satisfaction only in the online course but not in terms of perceived learning in either of the courses.

The study did not find a difference in the teaching presence categories between the two courses. However, although not statistically significant, there were fewer direct instruction responses in the blended course. Almost none of the messages were coded as design and organization category of teaching presence. The course design provided opportunities for students to share teaching presence by allowing them to lead and facilitate weekly discussions. All the students in the blended course and most of the students in the online course valued this opportunity indicating that it provided a new way to participate, made the discourse richer with different backgrounds and experiences, and helped them to learn better. The students appreciated the instructor's frequent communication, timely feedback and availability. They were pleased with clarity on assignments and evaluation. However, most of the students from the online course and some students in the blended course expressed that they could not see much teaching presence of the instructor on the discussion board. For the students in the online course this resulted in a need for more direct instruction by the instructor. During the interviews, most students emphasized the importance of teaching presence for learning and satisfaction. The Spearman Rank Correlation Coefficient revealed that

teaching presence was significantly related to satisfaction in both courses but it was significantly related to perceived learning only in the online course.

Another difference between the two course formats was on the cognitive presence categories. Overall, the transcript analysis in this study found that integration was the most frequently coded phase in both courses. However, the integration phase was found to be significantly higher in the blended course compared to the online course, whereas the exploration phase was found to be significantly higher in the online course than in the blended course. At the same time, the resolution phase had the least activity in both courses. Both the students and course instructor stated that they reached resolution by applying solutions to their course redesign projects developed in the integration phase. Students emphasized the role of learning activities and resources on the development of cognitive presence and their learning. It was also found that the students' final grades were identical. Both the analysis of the interviews and the Spearman Rank Correlation Coefficients revealed that cognitive presence is associated with learning and satisfaction in both learning environments.

Finally, the survey analysis yielded higher perceptions of each presence in both courses. However, the students in the blended course had slightly higher perceptions of each presence. The only significant difference was found on teaching presence. The Spearman Rank Correlation Coefficient also yielded some significant relationships among presences which varied according to the course. The only significant relationship found in both learning environments was between teaching presence and cognitive presence. In the blended course there was also a significant relationship between social presence and teaching presence.

CHAPTER 5

DISCUSSION AND CONCLUSION

5.1 Introduction

The purpose of this study was to examine the development of a community of inquiry in online and blended learning contexts in relation to students' perceived learning and satisfaction. The data collected through transcript analysis of online discussion, the CoI Survey, and interviews to examine social, teaching, and cognitive presence postings patterns; to explore students' perceptions of each presence, learning and satisfaction; and to compare the differences between online and blended learning environments. This chapter highlights the findings related to the research questions, discusses them in the light of previous research, and present practical implications for instructional design and future directions for research.

5.2 Social Presence

The results from the three sources of data (online discussions, survey and interview data) indicated that social presence was developed in both courses. This can be attributed to the success of course design (Tu, 2000; Swan & Shih, 2005) that the CoI approach applied in both courses to design the instructional strategies, methods, and learning activities supported the development of social presence as well as the other two presences. Within the online discussions, the open communication category (occurring as continuing a thread, quoting from and referring to other's messages, asking questions, complimenting, or expressing agreement/disagreement) was coded highest in both courses. Survey results were also consistent that the students' perceiving open communication items were higher in both courses than the items of interactive and group cohesion.

In terms of the affective communication and group cohesion categories, the statistical analysis using frequency values obtained from transcript analysis yielded significant differences. Affective expression indicators were found to be fewer in the blended course compared to the online course and decreased over time in the blended course. The higher level of affective communication such as expression of emotions, use of humor and self disclosure in the online course might be due to the need to establish climate in an online course whereas the face-to-face component of blended course might have decreased the need for affective communication on the online component. The other difference was on the group cohesion category which was found to be higher in the blended course than in the online course. This result can also be attributed to the face-to-face component of the blended course. The students in the blended course were able to see each other during the face-to-face meetings and thus easily identified themselves as a group. As Garrison and Vaughan (2008) indicated, face-to-face interaction has significant advantages in the early stages of group identity and establishing trust. In the online course, the progression of group cohesion in online discussions throughout the course showed that students started with a low sense of group identity but their sense of belonging to a group increased steadily over time. Their use of vocatives, inclusive pronouns such as "we", "our", and "us" increased through the end of the course. This result is contrary to Swan's (2002) study which revealed a decline on group cohesion over time. She reports that effective and interactive (i.e., open communication) categories increased while cohesive indicators decreased. The explanation was that it was "possible that the use of such reference became less necessary as a clear classroom community was formed."

Overall the differences on social presence posting patterns between the online and blended courses could be explained with the equilibrium model of social presence which suggests that social presence derives from both the affective communication channels available in a medium (ie, visual and aural) and the immediacy behaviors (such as higher levels of self disclosure and paralanguage) of the participating communicators (Danchak, Walther & Swan, 2001 as cited in Swan, 2002). It is argued that participants in environments with less affective communication channels available will evoke more immediacy behaviors to affect a kind of equilibrium of social presence with which they are comfortable. In this study, participants in the online courses employed more verbal immediacy behaviors than the students in the blended course in which students had a

chance to meet face-to-face. The percentage of the messages including social presence indicators in the online course was also higher compared to the blended course. Moreover, some students in the blended course indicated that their perceptions of social presence varied in the face-to-face and online components. These results also confirm that social presence represents a major role adjustment in moving from a real-time face-to-face classroom experience to a virtual community or vice versa (Cleveland-Innes, Garrison & Kinsel, 2007). On the other hand, these results contribute to the literature regarding the effect of the medium on social presence but not in the sense that the absence of visual channels decreases social presence (e.g. Short et al., 1976). Rather, these results imply that social presence might develop and progress in a different manner according to the features of the medium.

However, although not statistically significant, the analysis of the CoI Survey revealed higher perceptions of social presence in the blended course compared to the online course. The major reason for this might be the course design and the opportunity to meet face-to-face regularly contributed to higher perceptions of social presence in the blended course. Conrad (2005) also found that students valued face-to-face meetings for better connection and that they reported complementary relationships between face-to-face and online communications. So and Brush (2008) conclude that blended learning can be a viable option to decrease psychological distance and increase social presence and students' satisfaction in their examination of social presence, collaborative learning and satisfaction in a blended-format course. Apart from the course design, some contextual differences such as class size or participant characteristics were found to be other important factors for social presence. First, class size was identified as an important factor by the students in both courses. While the students in the blended course were satisfied with their class size (12), online course students found the class size (16) big for effective development of social presence. They further indicated that there were higher levels of social presence in small group activities. This was also found in the study of Stodel, Thompson and MacDonald (2006) in that social presence appeared to be greater in the triads than the class as a whole. Driver (2002) also found that small group interaction creates higher levels of social presence and satisfaction. Palloff and Pratt (2007) also indicate that group that are too large can be overwhelming for the instructors and the participants. In terms of participant characteristics, the

course instructor stated that most of the students in the blended course were new in graduate programs, thus they were more willing to build social networks.

Students in both courses valued social presence in reporting that social presence created a comfortable environment to share ideas, express views and collaborate. They found the learning environment supportive and encouraging for participation. Shea and Bidjerano (2009) also found that the social presence element associated with comfort in online discussion was the most significant item correlated with cognitive presence. In the study of Conrad (2005), the students indicated that increased sense of connection also increased their comfort in online discussions and provided more and better collaboration in group projects. However, there were differing views about the role of social presence on learning and satisfaction which will be detailed subsequently in the section on 'Learning and Satisfaction'. The differences on perceptions of social presence were also found in previous studies (e.g. Swan & Shih, 2005; Rourke & Anderson, 2002a). Swan and Shih (2005) interviewed two groups of participants who perceived social presence high and low and found that, while the students in the high social presence group appreciated and adopted a more conversational and social tone in their online interactions, students in the low social presence group definitely did not. In the study of Rourke and Anderson (2002a), it was found that students felt exasperated when social communication overtook critical discourse as the predominant theme of messages or of the conference. Students indicated that social expression is useful if they further the goals of the course but are time consuming and inappropriate otherwise. These differences can be explained by the differences on students' approaches to learning, needs or expectations in a learning environment. Therefore, it is very critical to ensure an optimal level of social presence which will be a means to an end (Garrison & Anderson, 2003).

5.3 Teaching Presence

The results from all sources of data revealed that teaching presence was developed in both courses. Transcript analysis of online discussions showed that the indicators of teaching presence found in the discussion board were not as frequent as the other two presences. One possible explanation for this result is that students still perceive teaching presence as the role of the course instructor. During the interviews students frequently mentioned that the role of the course instructor cannot be underestimated. Previous

studies have also found that students assume teaching presence responsibilities, especially in the direct instruction category, is mainly the role of the instructor (Rourke & Anderson, 2002b; Shea et al., 2006). Anderson et al. (2001) and Arbaugh and Hwang (2006) emphasized that the direct instruction category should be implemented by the instructor rather than the students as this category needs subject matter expertise in order to diagnose misconceptions. In this study, students performed direct instruction mostly as sharing and injecting knowledge from diverse sources. Moreover, especially in the online course students expressed their need to see the instructor more on the discussion board. In this regard, this study support the authors' argument and provides evidence for the need of an instructor to provide direct instruction, especially in the form of diagnosing comments for accurate understanding and moving discussions in useful directions which requires content expertise (Anderson et al., 2001; Arbaugh & Hwang, 2006).

The transcript analysis of online discussions did not reveal a significant difference in terms of the teaching presence categories between the two courses. Almost none of the messages included indicators for the design and organization category of teaching presence. This is because the activities in the instructional design and organization category start before the beginning of the course and were not visible to the students (Anderson et al., 2001). Overall, there were more teaching presence indicators found in the online course discussions. This result is probably due to the face-to-face component of the blended course such that students also performed the roles of teaching presence during face-to-face meetings. For example, although not statistically significant, there were fewer direct instruction responses in the blended course. However, as the course instructor observed during the interview, the students could share resources and inject knowledge during face-to-face meetings as well. In short, it could be said that teaching presence in the blended course was split between the online and face-to-face components.

The CoI Survey yielded significant differences between the online and blended courses on students' perceptions of teaching presence. The students in the blended course had higher perceptions of teaching presence than the students in the online course. This finding could be anticipated since the students in the blended course had opportunities to interact with the course instructor in face-to-face meetings. The course instructor did

not frequently participate in the discussion board in both courses, but was active during the face-to-face meetings in which they initiated and concluded weekly discussions. This also explains why some of the survey items ("The instructor helped to keep course participants engaged and participating in productive dialogue" or "The instructor helped to focus discussion on relevant issues in a way that helped me") were perceived to be low in the online course whereas they were perceived to be high by the students in blended course.

The students in both courses had very positive feelings about the course instructor. Their responses indicated that they appreciated the instructor's frequent communication, timely feedback and availability. Also students were pleased with clarity on assignments and evaluation. Overall these views imply that students were satisfied with the design and organization category of teaching presence. However, most of the students from the online course (eight students) and four students from the blended course expressed that they could not see much teaching presence of the instructor on the discussion board. For the students in the online course this resulted in a need for more direct instruction but this was not the case for the students in the blended course. Perhaps due to the fact that the main medium to interact with the instructor was the online discussion board, they felt more need for instructional guidance compared to the students in the blended course. In the study of Kim, Liu and Bonk (2005), although the students found online learning environment as providing more opportunities for interaction with instructors, they suggested more interaction with, and more frequent and prompt feedback from, instructors in order to increase the quality of online programs. Stodel, Thompson and MacDonald (2006) reported that what the students missed in an online learning environment was the lack of immediacy, spontaneity and quickness of a face-to-face learning experience. A strong and active presence on the part of the instructor – one in which the instructor actively guides the discourse is found to be related to both a sense of student connectedness and learning (Pawan et al., 2003; Shea, 2006; Ling, 2007; Donohoe, Mahon & O'Neill, 2008). Similarly, the students in the study of Conrad (2005) reported instructors as main contributors to community. Simply, learners indicated that "good instructors created community, poor instructors did not." This is especially true when the students are new to the online learning environment. It has been found that students need more visible teaching presence of

the instructor at the beginning of a course to ease the adjustment process (Cleveland-Innes, Garrison & Kinsel, 2007).

The design of both courses provided opportunities for students to share teaching presence by allowing them to lead and facilitate weekly discussions. All the students in the blended course and most of the students in the online course valued this opportunity indicating that it provided a new way to participate, made the discourse richer with different backgrounds and experiences, and helped them to learn better. The students in the study of Rourke and Anderson (2002b) also found peer led discussions more responsive, more interesting, and more structured compared to instructor led discussions. Several students in their study also indicated that they learned the content better during the week when they led discussions. However, some students in online course expressed some difficulties such as inconsistency on the learning goals when different students lead the discussion each week or in terms of interpreting others' comments without meeting them in person. The instructor also emphasized the role of social presence for the development of teaching presence. As the results here on social presence indicate, it takes more time for the students in the online course to get to know each other and build group cohesion.

5.4 Cognitive Presence

In both learning environments the students' level of cognitive presence revealed in online discussions was found to be high and they perceived cognitive presence to be strong in the course. Contrary to most of the previous studies (Garrison, Anderson & Archer, 2001; McKlin, Harmon, Evans & Jones, 2002; Meyer, 2003; Pawan, Paulus, Yalcin & Chang, 2003; Vaughan & Garrison, 2005; Kanuka, Rourke & Laflamme, 2007; Stein et al., 2007; de Leng, Dolmans, Jöbsis, Myijtjens & van der Vleuten, 2009) but consistent with the results of Meyer's (2004) and Pisutova-Gerber and Malovicova's (2009) study, the integration phase was found to be the most active in both online and blended environments. The higher levels of cognition found in this study could also be attributed to the synergistic environment created through shared teaching presence (Schrire, 2006).

However, the integration phase was found significantly higher in the blended course compared to the online course; whereas the exploration phase was found significantly

higher in the online course than in the blended course. The explanation for these differences could be that students in the blended course started discussions in face-to-face meetings (i.e., the triggering event and exploration mostly occurred in the face-to-face meetings). This also explains the lower level of triggering event codings on the discussion board in the blended course. Online discussion could be more reflective, more rigorous, and easier to keep track of ideas in the blended course. At the same time, Meyer (2003) in her study of face-to-face and online discussions found that students take advantage of the different strengths of each setting. Moreover, some activities associated with exploration such as brainstorming might work best face-to-face (Meyer, 2003). Similarly, the students in a study by Vaughan and Garrison (2005) indicated that the face-to-face component was the preferred venue for the triggering event and exploration. On the other hand, the integration phase was supported through the reflective nature of online discussions. Considering all these aspects, it can be concluded that the online and face-to-face components of a blended course should be integrated to complement each other if higher levels of critical inquiry are to be achieved. Based on the results of this study, it can be suggested that starting and ending the discussions in a face-to-face setting could decrease the time needed for exploration, provide a fruitful base for reaching high levels of integration through reflective nature of online discussions, and then reaching a solution through confirmation and clarification in a more enjoyable and energetic environment.

Consistent with previous research, the resolution phase was found having the least activity (McKlin, Harmon, Evans & Jones, 2002; Meyer, 2003; Pawan, Paulus, Yalcin & Chang, 2003; Meyer, 2004; Vaughan & Garrison, 2005, Stein et al., 2007; Kanuka, Rourke & Laflamme, 2007). However, these findings are explainable in the context of the research reported here and the instructional design of both courses. The explanation offered is that resolution thoughts were directed to the student's individual course redesign project. This was confirmed through the interviews when students stated that they reached resolution by applying solutions to their course redesign projects developed in the integration phase. Perhaps, the resolution phase should be investigated more in terms of the final project than the discussion board. While the course design through the projects encouraged students to move to resolution, it should be noted that time was identified as a barrier in online discussions in terms of reaching resolution. Therefore, it may be that the length of the course is not sufficient for students to put

their projects in action and share the application results with the other students. The literature also indicates time, the design of learning activities, the moderator's approach to lead the threads and the medium's ability as important factors to reach higher levels of inquiry (Garrison, Anderson & Archer, 2001; McKlin et al., 2002; Meyer, 2003, 2004; Vaughan & Garrison, 2005; Kanuka, Rourke & Laflamme, 2007; Stein et al., 2007; Pisutova-Gerber & Malovicova, 2009; de Leng et al., 2009). Considering these findings, it can be concluded that the online discussion board is an effective tool to represent students' level of cognition during the learning process; however, because of some contextual constraints such as design and time, the discussion was not sufficient to demonstrate the final phase of cognitive presence (i.e., resolution) thoroughly.

Overall the results of transcript analysis provide support to the argument that the extent to which cognitive presence is created and sustained in a community of inquiry is partly dependent upon how communication is restricted or encouraged by the medium (Garrison et al., 2000). Having the strengths of two media, blended learning is particularly effective for developing a community of inquiry by providing conditions and adding an important reflective element with multiple forms of communication to meet specific learning requirements (Garrison & Kanuka, 2004). The CoI Survey provided evidence of higher levels of perceived cognitive presence in the blended course. Students in the blended course perceived each aspect of cognitive presence higher than the students in the online course. However, the biggest difference found between the two courses was on the item, "Online discussions were valuable in helping me appreciate different perspectives," indicating that students in the blended course valued online discussions higher than the students in the online course. However, some students in the blended course indicated that they were not active on the discussion board as much as they used to be in a fully online course; they preferred face-to-face meetings to express and share their ideas. Students also expressed different views about online discussions during the interviews. The students who are new to online discussion indicated that it provided opportunities to see different perspectives and to frame their thoughts which helped them to reach higher levels of learning. Differing views of students about online discussions was also found in the study of Stodel, Thompson and MacDonald (2006). These differences could also be explained by how students approach learning or their needs or expectations.

The design of learning activities has a significant impact on how students approach learning (Garrison & Cleveland-Innes, 2005). In this study, students in both courses stressed the role of learning activities on the development of cognitive presence and, in turn, their learning. They described learning activities as challenging, collaborative and engaging. The students valued group work and some also expressed their preference of more group work activities. Collaboration goes beyond interaction and is essential in a CoI to establish and maintain cognitive presence. What a collaborative process means in a CoI is realizing understanding and creating knowledge (Garrison et al., 2000). This study affirms structured collaborative activities for deeper and meaningful learning as suggested previously (Garrison & Cleveland-Innes, 2005; Schrire, 2006). Moreover, a recent study indicated that epistemic engagement in which the students become collaborative knowledge builders is well articulated and extended through the CoI framework (Shea & Bidjerano, 2009). The study of Arbaugh and Benbunan-Fich (2006) also confirmed the ascendency of collaborative constructivist approaches. The authors found evidence to suggest that group collaboration or knowledge construction can potentially improve students' perceived learning and final grades.

5.5 Relationships among CoI Presences

Although the sample size is fairly small to make any definitive conclusion about the relationships among the CoI presences, it is still noteworthy to discuss their dynamics. The representation of the CoI framework defines the relationship among presences as inter-dependent. Both the correlation analysis of the CoI Survey data and the analysis of the interviews revealed the effect of each presence on the others. During the interviews, students' responses to the questions about their perception of the CoI also highlighted the fact that each presence is integrated in such a way that students' perceptions of one element influenced their perception of the whole community of inquiry. The Spearman Rank Correlation Coefficient yielded significant relationships among the presences, but varied according to the course.

The only significant relationship found in both learning environments was between teaching presence and cognitive presence. This relationship was also confirmed by students during interviews. For example, they emphasized the role of learning activities (i.e. design and organization) on the development of cognitive presence and how facilitating the discourse or sharing different resources helped them to reach higher

levels of critical thinking. Garrison and Cleveland-Innes (2005) also made the association between teaching presence and cognitive presence such that teaching presence in the form of structure (i.e. design) and leadership (i.e. facilitation and direction) was crucial for deep and meaningful approaches to learning. Moreover, Meyer (2003) and Pawan et al. (2003) also found the need for the instructor's explicit guidance and "teaching presence" to reach higher levels of inquiry.

In the blended course there was also a relationship found between teaching presence and social presence. One possible explanation for this difference could be that as the students had a chance to interact with the instructor weekly during face-to-face meetings, they perceived the instructor more as a member of the community. Richardson and Swan (2003) also found that students' perceptions of social presence were related to the perceptions of their instructors as having a satisfactory online presence in terms of amount of interaction and/or quality of that interaction. Overall, the changes in cognitive, social and teaching presence and interactions among them are acceptable as a result of a context and communication medium differences (Cleveland-Innes, Garrison & Kinsel, 2007).

Two recent studies attempted to confirm the relationship among presences with bigger sample sizes using the CoI Survey. These are the studies conducted by Shea and Bidjerano (2009) and Garrison, Cleveland-Innes and Fung (unpublished manuscript). In both studies, it was hypothesized that teaching presence is a predictor of variance in learner ratings of social and cognitive presence, and that social presence plays a mediating role in ratings of cognitive presence. The results of both studies were consistent and confirmed the interconnectedness of the three presences in the CoI framework. Overall, it was found that student perceptions of teaching presence directly predict perceptions of social and cognitive presence and that perception of social presence also significantly predict perceptions of cognitive presence. Stein et al. (2007) investigated the relationships among presences applying a different methodology. The researchers examined the flow and sequence of the appearances of social, teaching and cognitive presence indicators in synchronous discussions. They found that both social presence and teaching presence supported cognitive presence through statements that express agreements and keeping the discussion organized and on track.

5.6 Learning and Satisfaction

The CoI Survey, final grades and the interviews with students together provided evidence for higher levels of learning and satisfaction in both courses. In terms of learning perception, the results indicate that students in both courses believed that there was a high degree of learning. Consistent with a high perception of learning, students' grades were also high in both learning environments. Overall students in both courses were satisfied with the course. However, although not statistically significant, it is interesting to note that students in the blended course had higher perceptions of learning and satisfaction. These results are in contrast to the findings of Lim, Morris and Kupritz (2007) who did not show a difference on perceived learning between blended and online learning environments. On the other hand, similar to their study, there was no difference on learning outcomes regarding course format. In terms of satisfaction levels of learners in an online and blended course compared, the results of their study indicated that learners in an online delivery format experienced higher workload, higher level of instructional difficulty and less instructional support than the learners in the blended delivery group.

This study also attempted to explore the impacts of CoI presences on learning and satisfaction. It is important to note that there was a relationship between students' perceived level of cognitive presence (i.e., practical inquiry) and their learning in both learning environments. Although caution in interpretation of these results is necessary due to the small sample size, given that all findings related to learning were high, it can be concluded that cognitive presence in a CoI is strongly associated with high levels of perceived learning. It is suggested that collaborative development of cognitive presence in online discussions and students' perception of cognitive presence is associated with high perceptions of learning and actual learning outcomes in terms of grades.

With regard to teaching and social presence in relation to learning and satisfaction, the correlational analysis results varied according to the course format. Teaching presence was directly related to both satisfaction and learning in online course but only with satisfaction in blended course. This difference can be explained to some extent with the findings from other data sources. First, the analysis of interviews yielded that there was more perceived teacher presence in the online course than a shared teaching presence. Second, students in the online course expressed their need for instructor presence on

the discussion board. Third, the perception of teaching presence was found significantly lower in the online course. Taken together, it could be said students in the online course might have been more dependent on the teacher for their learning due to the lack of face-to-face interaction. On the other hand, the small sample size may have contributed to the lack of statistical significance between teaching presence and learning in the blended course. because during the interviews most students emphasized the critical role of teaching presence on their learning as well as other two presences. Previous research also indicates relationships between teaching presence and learning and satisfaction (Shea, Pickett & Pelz, 2003; Shea, Pickett & Pelz, 2004; Mingming & Evelyn, 1999; Eom, Wen & Ashill, 2006). Minming and Evelyn (1991) found that students' perceived interaction with their instructor is the most influential factor significantly related to perceived learning. The study of Shea et al. found each aspect of teaching presence (design and organization, facilitating discourse and direct instruction) significantly related to students perceived learning and satisfaction. Eom, Wen and Ashill (2006) especially emphasize feedback from instructors as a motivator to many students and suggest that it should be incorporated into the design and teaching of online courses.

It this study, there was not a direct relationship found between social presence and perceived learning. This is contrary to previous study findings in both learning environments (Gunawadena & Zittle, 1997; Tu & McIsaac, 2002, Picciano, 2002; Richardson & Swan, 2003; Swan & Shih, 2005). However, there was a relationship between social presence and satisfaction in the online course consistent with previous research findings (Richardson & Swan, 2003; Swan & Shih, 2005). In the online course, most students valued social presence but did not perceive it as a strong determinant for their learning. Wise, Chang, Duffy, and del Valle (2004) examined this linkage from a different perspective by manipulating the social presence cues in the instructor's messages to students from a formal to more friendly manner. The results of their study indicated that social presence increased the number of messages written by the students and influenced their perception of the instructor, but it had no effect on perceived learning, satisfaction, or engagement. However, for the blended course, correlational results were inconsistent with the interview results, in that more students in the blended course (compared to the online course) emphasized the role of social presence on satisfaction and learning. Sener and Humbert (2004) also suggest distinguishing student satisfaction between fully online learning and those of hybrid or blended learning

designs. The authors believe that the approaches, needs, and current state of practice in each type are different in many respects and fully online designs are easier to study and evaluate than blended learning designs.

In the blended course, the perceived learning and satisfaction was also found to be significantly related. This finding is consistent with the study of So and Brush (2008) who found that students who reported high levels of collaborative learning tended to be highly satisfied in a blended format course.

5.7 Practical Implications

The main emphasis of the CoI framework is to create an effective community that enhances and supports learning. Building a learning community is valuable as it serves social needs as well as enhancing student satisfaction and learning through community involvement (Palloff & Pratt, 2005). A recent study has emphasized that epistemic engagement where students are collaborative knowledge builders is well articulated and extended through the CoI framework (Shea & Bidjerano, 2009). This research illuminated how community of inquiry developed in two different learning environments. It is very important to note that the course design based on the CoI framework was successful in enabling the development of each presence in both learning environments. Due to the small sample size, the findings of this study cannot be generalized. However, taking into consideration the contextual differences and contingencies, instructional designers can apply the CoI framework and approach to designing effective online and blended environments for effective teaching and learning. Based on the findings of this research, this section reports the practical implications for the design and delivery of online and blended courses to develop each element of the CoI framework for the purpose of enhancing and supporting learning and satisfaction.

5.7.1 Social Presence

Social presence was developed in each course but it took more time to develop group cohesion in the online course. Previous studies also indicate the difficulty to develop social presence in an online learning environment notwithstanding the application of several strategies (e.g. Stodel, Thompson & MacDonald, 2006; Donohoe, McMahon, O'Neill, 2008). Garrison and Anderson (2003) indicated that face-to-face meetings have an accelerating effect on establishing social presence. Blended courses inherently have

this advantage and this was confirmed in this study with higher levels of group cohesion earlier in the course. In the online course, the time needed for the development of social presence could be shorten by increasing the opportunity for synchronous meetings. These meetings could be optional in order to maintain the "convenience" of online learning. Donohoe et al. (2008) also propose utilizing emerging technologies, ranging from interactive voice response systems to the integration of audio and video technologies. Another strategy suggested by Rogers and Lea (2005) is making the environment "collectivised" by reflecting the identity of the group rather than individuals that make up the group, which in turn enhances the development of social presence. The authors exemplify this strategy by removing all personal information from the initial group communication to focus attention towards the goals and norms of the collaborating group and giving instructions to the group as a whole, rather than to individual group members in order to make the group identity salient.

Social presence increases the quality of the message in a true CoI; "the tone of the message is questioning but engaging, expressive but responsive, skeptical but respectful, and challenging but supportive" (Garrison et al., 2000, p.96). Therefore, modeling by the instructor is important to provide an appropriate expression of social presence. In this research, the course instructor was quite successful in modeling the facilitation of discourse using of the indicators of each of the presences in a way that the students could easily adapt. Their messages were respectful, supportive, encouraging and challenging.

Class size is another influential factor emphasized by the students from both learning environments. Considering the class sizes in both courses, a class size between 10 or 15 might be good enough for an effective CoI, as the course instructor suggested. Palloff and Pratt suggest 5 to 10 as an ideal number if it is going to be an asynchronous class. On the other hand, the students also indicated that they felt greater social presence in small group activities such as peer critiques. Therefore, if there is no chance to reduce class size in a learning environment, then the number of small group projects could be increased. If developing group identity is the goal, then changing the group members each time so that all the students could have chance to interact each other.

5.7.2 Teaching Presence

Teaching presence must recognize and utilize the unique features of the medium and structure and model appropriate learning activities (Cleveland-Innes, Garrison & Kinsel, 2007). In both learning environments students were satisfied with the level of teaching presence and there was no difference in terms of the development of teaching presence categories between the two courses. Shared teaching presence was valued but it was found that some aspects of teaching presence were assumed to be the roles of the course instructor. Moreover, most students in the online course expressed their need to see instructor presence more on the discussion board.

In terms of design and organization category, students expressed their satisfaction with clearly defined course goals, clarity on assignments and grading, balanced resources and activities, and frequent communication. High teaching presence on design and organization of the course also helped students to resolve some of their questions or concerns at the beginning of the course. Participation in an online or blended course requires commitment to the process also by the students as well as the instructor. The instructors should clearly outline participation requirements in the course syllabus indicating deadlines for initial posts, required responses by certain dates, and description of the length contribution to discussion (Pawan et al., 2003). This may also help students to overcome time deficiency issues and enhance their cognitive presence. Students should be encouraged to think about the activities in terms of their importance and urgency (Palloff & Pratt, 2003; Baker, 2004). Clear communication of time parameters, due dates and deadlines also contribute to an online learning community (Shea et al., 2006).

Another important design idea which was applied successfully and valued by students is sharing the responsibilities of teaching. The teacher successfully modeled how to use the medium and facilitate online discussions at the beginning of each course. This would also increase students' commitment. Students expressed that it is a good strategy to learn from each other, make the discussions richer and gain more responsibility for their learning. During the modeling process, the instructor was highly present and visible which is also helpful for new comers to the online or blended learning environment to ease the adjustment process (Cleveland-Inness, Garrison & Kinsel, 2007; Conrad, 2005).

However, as indicated previously, the instructor's absence from the discussion board created a need for his presence in the online course in terms of direct instruction. This was not the case for students in the blended course probably due to the face-to-face meetings during which they had an opportunity to interact with the instructor. This was especially true in the online course in which students might be more dependent on the instructor for their learning. Therefore, it is strongly suggested that instructors contribute to the discourse, particularly in terms of direct instruction (Anderson et al., 2001; Meyer, 2003; Arbaugh & Hwang, 2006). This was also the most cited recommendation by the students in the online course to increase the effectiveness of the course. Moreover, the course instructor anticipated this need and expressed his future plan to put more presence on weekly discussions in an online course. This could be done on the discussion board or during synchronous meetings in an online course like the face-to-face meeting in blended course. As Garrison and Vaughan (2008) suggest cognitive presence guidelines associated with direct instruction ensures that discourse moves to resolution. In the study of Pisutova-Gerber and Malovicova (2009), it was found that when students were gravitated toward trying to explore, integrate and find solutions by the course instructor, the level of resolution phase was higher in online discussions.

Instructor's immediacy behaviors were found to be important in this study and previous studies (e.g. Shea, 2005; Donohoe, Mahon & O'Neill, 2008). Students appreciated the instructor's immediacy through immediate feedback, frequent communication, and virtual office hours. Explanatory feedback is especially important in terms of direct instruction to provide clarification, explanation and possibly expansion of ideas for students to better understand their mistakes (Arbaugh & Hwang, 2006). The online instructor can also foster immediacy by using the student's first name in posted replies, or by sending personalized e-mail messages to online learners. Such occasional e-mail messages might be used to highlight a new article of interest, commend a student who made an insightful contribution in one of the required discussion forums, or simply to encourage students as they progress through the course (Baker, 2004). It was found that improving faculty awareness of teaching presence increased the students' learning and satisfaction level (Shea et al., 2004). Therefore, workshops or training could be provided for instructors to increase their ability to design and organization, facilitating discourse, and direct instruction.

5.7.3 Cognitive Presence

In terms of cognitive presence, it is important to understand the natural cycle of the learning process. Awareness of phases of inquiry or learning can be useful in understanding and selecting specific strategies and activities. Modeling the phases by the course instructor or facilitator would provide students with concrete examples of how to approach subject matter in order to construct personal meaning (Garrison, 2003).

The advantage of blended learning was more obvious in terms of the development of cognitive presence. The results of this study indicated that the benefits of blended learning are beyond convenience and access; it was found in this research that the integration phase of the practical inquiry was significantly higher in the blended course. As Vaughan and Garrison (2005) indicated, when the strengths of online and face-to-face components are integrated in congruent and appropriate manner, the possibility to reach higher levels of inquiry increases. The discussion in the blended course occurred both in face-to-face and online components. The discussions started in a face-to-face meeting and continued online and ended in a face-to-face environment. This strategy effectively split the phases of practical inquiry. Most of the triggering event and exploration phases occurred during face-to-face meetings. The online component provided a platform where there was a greater focus on substantive issues and less distraction or noise which led to reaching higher levels of integration. The same strategy could be applied by course instructors or instructional designers. Moreover, it has been suggested that students prefer face-to-face meetings for the first phases of practical inquiry (Vaughan & Garrison, 2005). In a fully online course, this strategy could be applied using synchronous meetings instead of face-to-face meetings. Overall, this may also reduce the time needed to reach higher levels of inquiry, which was stressed by the students in the online course.

The importance of learning activities was emphasized in this research by both students and the instructor in relation to cognitive presence. The learning activities and resources should be challenging for students to reach higher levels of inquiry. Group projects are excellent ways to have students collaboratively apply their new knowledge (Garrison, 2003). In this study, there was a desire on the part of students for more group projects. Some students even suggested conducting the final course redesign project in groups. Therefore, it is suggested to design and implement more collaborative activities. As long

as the expectations and guidelines are clear, group projects can offer opportunities to engage in relevant, realistic problem solving (Garrison & Vaughan, 2008).

5.7.4 Blended Learning Strengths

The goal in this section was to provide suggestions for the development of each presence to increase the overall effectiveness of each learning environment. At the same time it is difficult to generalize about practical implications as it must be kept in mind that student characteristics, nature of instructional goals, instructor background, learning resources or such variables make each learning environment unique. Thus, no CoI developed in a learning environment is identical and the impact of each presence on learning and satisfaction may vary (Akyol & Garrison, 2008). Therefore, a thorough analysis at the beginning is crucial for design considerations.

However, the findings here suggest that there are distinct advantages of the blended course over the online course. An online or blended learning approach will most likely be determined through contextual contingencies such as the ability or willingness of participants to meet face-to-face. The apparent strengths of blended learning designs found in this research study are: (i) it reduces time needed to develop group cohesion (ii) it promotes reaching higher levels of inquiry by enabling more time for reflection and (iii) it satisfies more students by providing multiple forms of communication. Overall, these findings provide support for the assertion of Garrison and Kanuka (2004) that blended learning environment is particularly effective to support a community of inquiry. Palloff and Pratt (2007) indicate that blended courses allow increased flexibility and the ability to move course components to either the online or face-to-face arena as deemed appropriate, which in turn, creates different combinations that can better meet the learning and teaching needs.

5.8 Suggestions for Future Research

This research examined an online and a blended course from multiple perspectives in order to gain an in-depth understanding of how a CoI develops. This study may set the stage for future research studies by emphasizing the importance of each element of inquiry CoI in relation to students' learning and satisfaction in both online and blended learning environments. Future research studies with larger sample sizes could be undertaken to further examine the development and progression of community of

inquiry in similar or different contexts. In this study, a graduate course was the context of the study. Future research could expand the context by studying undergraduate, K-12 or corporate training contexts. It is argued here that the CoI may develop differently and the impacts of each presence on learning and satisfaction may vary according to the context. As Swan, Garrison and Richardson (2009) suggested inter- and intra-institutional research could be conducted, both to validate the model as a whole and to make use of the model in a myriad of studies that could move online and blended learning research significantly forward by involving different institutions rather than studying one single institution or a single course.

In this study, some contextual factors impacting the development of social, teaching or cognitive presence were found from the analysis of qualitative data. With the recent development of the CoI Survey (Swan et al., 2008; Arbaugh et al., 2008), researchers could investigate these factors such as time or class size in relation to perceptions and development of communities of inquiry with larger sample sizes. Also, the CoI Survey could be tested and validated in other international contexts.

Finally, in order to provide a holistic understanding of learning, it is recommended that researchers continue to examine both self-reports of learning and actual grades as they are likely measuring different aspects of learning processes and outcomes. Moreover, students' final projects, which were asserted as the real representation of the resolution phase by the students and the instructor of the course in this research, should be involved in future research in order to examine the critical inquiry process more thoroughly.

5.9 Conclusion

The developments on technology and changing needs of learners make online and blended learning become widespread. This situation increases the recognition of the importance to design and develop learning environments that can better meet the needs and expectations of learners. The main emphasis of community of inquiry framework is to create an effective community in which the various forms of presence – social, teaching and cognitive - integrated to enhance and support learning. Building a learning community is valuable as it serves social needs as well as it enhances students satisfaction and learning by community involvement (Rovai, 2002; Ertmer & Stepich,

2004; Palloff & Pratt, 2005; Shea, 2006; Shea, Li, & Pickett, 2006; Liu, Magjuka, Bonk & Lee, 2007). However, external elements such as technology concerns, student's characteristics, or content level might affect students' sense of community of inquiry as well. For example, within a community of inquiry, Shea, Li and Pickett (2006) demonstrated a clear connection between perceived teaching presence and students' sense of learning community in their study. Ice (2008) examined the impact of audio feedback and found that using audio feedback increased students' perceptions of each presence. The impact of course duration was studied by Akyol, Vaughan and Garrison (in press) and it was found that there were developmental differences on social and cognitive presence specifically. The main contribution of this research to the literature on Community of Inquiry is illuminating the development and progression of all three elements of the framework in two learning environments. First of all, it is very important to note that the course design based on the CoI framework was successful in enabling the development of each presence in both learning environments. However, the findings here suggest that there are distinct advantages of the blended course over the online course. An online or blended learning approach will most likely be determined through contextual contingencies such as the ability or willingness of participants to meet face-to-face. The apparent strengths of blended learning designs found in this research study are: (i) it reduces time needed to develop group cohesion (ii) it promotes reaching higher levels of inquiry by enabling more time for reflection and (iii) it satisfies more students by providing multiple forms of communication. Overall, these findings provide support for the assertion of Garrison and Kanuka (2004) that blended learning environment is particularly effective to support a community of inquiry.

One of the unique contributions of this research is the examination of students' learning in a community of inquiry with a more holistic approach. Recently, Rourke's (2008) synthesis of learning in a community of inquiry revealed the need for more robust studies to provide the 'how' and 'what' of learning. Considering these issues, this research provided a more comprehensive understanding of cognition by exploring the 'how' and 'what' of learning (both processes and outcomes). To do so, the research used asynchronous online discussions, perceived learning and satisfaction as well as learning outcomes. The results suggest that there is a strong relationship between collaborative constructivism and higher-order learning outcomes. The strength of the community of

inquiry framework is its emphasis on collaborative constructivist approaches for designing learning environments in order to provide deep and meaningful learning experiences. However, as several students suggested, it is important that all the presences are present and in balance. Establishing and sustaining cognitive presence and deep approaches to learning in online and blended learning environments are dependent upon a dynamic balance of all the presences to support a collaborative community of inquiry.

Due to the small sample size, the findings of this study cannot be generalized. At the same time, it must be kept in mind that student characteristics, nature of instructional goals, instructor background, learning resources or such variables make each learning environment unique. Thus, no CoI developed in a learning environment is identical and the impact of each presence on learning and satisfaction may vary (Akyol & Garrison, 2008). However, taking into consideration such contextual differences and contingencies, instructional designers can apply the CoI framework and approach to designing effective online and blended environments for effective teaching and learning.

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APPENDIX A

INTERVIEW QUESTIONS

- Were there any specific reasons to choose this course?
- At the beginning of the semester, what were the key questions or concerns you had about the course for your learning and motivation?
    - As a result of your experience this term, have you been able to resolve these questions or concerns?
- How do you feel about the community of inquiry approach taken in the course? Do you think that community of inquiry developed?
- How do you feel about the teaching presence in the course? Are there any factors that affected your sense of teaching presence? How did teaching presence influence your satisfaction and learning?
- How do you feel about your social presence and others' social presence in the course? How did social presence affect your learning and satisfaction?
- How do you feel about the cognitive presence in the course? How did cognitive presence affect your learning and satisfaction?
- How do you feel about the learning activities in the course? Online discussions, group works, assignments, wikis, article critiques, final project etc.
- Based on your experience in this course, would you like to take online/blended courses in the future and would you recommend this course to others?
- What suggestions or recommendations can you provide in order to increase the effectiveness of this course?
- Do you have any other insights about your experience or about course generally?

APPENDIX B

COMMUNITY OF INQUIRY SURVEY

Demographics:

1. Age:
- ☐ 20-29
- ☐ 30-39
- ☐ 40-49
- ☐ 50 or above

2. Sex:
- ☐ Female
- ☐ Male

3. Which graduate program are you currently enrolled in?
- ☐ M.Ed
- ☐ M.A
- ☐ M.Sc
- ☐ Ed.D
- ☐ Ph.D
- ☐ Unclassified Student

4. How many course have you taken in your program?

5. Have you taken any online or blended courses before? If yes, how many courses have you taken?

6. Where do you currently live (i.e. city/country)?

7. How would you rate your computer skills?

- ☐ Novice
- ☐ Intermediate
- ☐ Advanced

8. Please rate the followings

	Strongly disagree	**Disagree**	**Neutral**	**Agree**	**Strongly Agree**
Teaching Presence					
The instructor clearly communicated important course topics					
The instructor clearly communicated important course goals.					
The instructor clearly communicated important course topics					
The instructor clearly communicated important due dates/time frames for learning activities.					
The instructor was helpful in identifying areas of agreement and disagreement on course topics that helped me to learn.					
The instructor was helpful in guiding the class towards understanding course topics in a way that helped me clarify my thinking.					
The instructor helped to keep course participants engaged and participating in productive dialogue.					
The instructor helped keep the course participants on task in a way that helped me to learn.					
The instructor encouraged course participants to explore new concepts in this course.					
Instructor actions reinforced the development of a sense of community among course participants.					
The instructor helped to focus discussion on relevant issues in a way that helped me to learn.					

The instructor provided feedback that helped me understand my strengths and weaknesses.					
The instructor provided feedback in a timely fashion.					
Social Presence					
Getting to know other course participants gave me a sense of belonging in the course.					
I was able to form distinct impressions of some course participants.					
Online or web-based communication is an excellent medium for social interaction.					
I felt comfortable conversing through the online medium.					
I felt comfortable participating in the course discussions.					
I felt comfortable interacting with other course participants.					
I felt comfortable disagreeing with other course participants while still maintaining a sense of trust.					
I felt that my point of view was acknowledged by other course participants.					
Online discussions help me to develop a sense of collaboration.					
Cognitive Presence					
Problems posed increased my interest in course issues.					
Course activities piqued my curiosity.					
I felt motivated to explore content related questions.					
I utilized a variety of information sources to explore problems posed in this course.					
Brainstorming and finding relevant information helped me resolve content related questions.					
Online discussions were valuable in helping me appreciate different perspectives.					
Combining new information helped me answer questions raised in course activities.					

Learning activities helped me construct explanations/solutions.					
Reflection on course content and discussions helped me understand fundamental concepts in this class.					
I can describe ways to test and apply the knowledge created in this course.					
I have developed solutions to course problems that can be applied in practice.					
I can apply the knowledge created in this course to my work or other non-class related activities.					
Satisfaction					
Overall, I was satisfied with this course					
Learning					
I learned much in this course.					

9. Please answer the following questions:

a) How has teaching, social and cognitive presence positively affected you in terms of satisfaction and learning?

b) Which aspects of teaching, social and cognitive presence has negatively affected your satisfaction and learning?

c) How has your sense of community positively or negatively affected your satisfaction and learning in this course?

d) Do you have any other insights about the effectiveness of you online course?

APPENDIX C

COURSE SYLLABUS

Faculty of Education
Graduate Division of Educational Research

EDER 679.20 L20

Blended Learning
Educational Technology Specialization
Fall 2007

COURSE DESCRIPTION

The idea of blending different approaches to learning is not new. Recent interest in blended learning has been precipitated by the infusion of Web-based technologies into the learning and teaching process. These technologies have created new opportunities for students to interact with their peers, teachers and content; inside and outside of the classroom. The goal of a blended learning environment is to join the best features of in-class teaching with the best features of online learning to promote active, self-directed learning opportunities for students with added flexibility. The concept of a community of inquiry will frame this course.

Graduate students interested in the integration of communications technology and course design will find this course of particular value. The course is an in-depth study of blended learning using the community of inquiry framework to guide innovative course redesigns. However, students will be encouraged to critically analyze other frameworks and approaches. Considerable flexibility and choice will be afforded participants in selecting particular topics of interest and relevance to their work experience.

OBJECTIVES

The intent of this course is to explore the concept of blended learning in higher education, K to 12, and corporate training contexts.

Specific objectives include:

- investigating the nature of blended learning
- examining how face-to-face and online environments can be integrated to support deep approaches to learning
- discussing course redesign principles for blended learning
- developing course redesign scenarios

REQUIRED TEXTS

All the required readings for this course are available online and linked to the course Blackboard site. A valid University of Calgary ID will be required to access some of the reading materials through the University of Calgary's online library system. In addition, you are expected to search for additional resources to enhance your course experience.

USE OF TECHNOLOGY

The nature of this course requires you to have basic competency in word processing, e-mailing and browsing the World Wide Web.

Blackboard (http://blackboard.ucalgary.ca) is a web-based learning management system that will be used in this course. To access our course site in Blackboard, you are required to enter your IT (formerly AIX) username and password. If you do not have an IT username and password, you will need to register for an account before the start of the class.

There will be opportunities in this course to use the Elluminate Live! synchronous communication system. If you have not used this application before you will need to download it to your home and/or office computer (http://elearn.ucalgary.ca/elluminate/students.html). In addition, you will need to have a head set with a microphone.

METHODS OF ASSESSMENT

Assessment in this course will be based on the outcomes of several individual and collaborative
learning assignments:

Description	Due	% of Grade
1. Read and respond to articles • During this course you will select one blended learning article to read and review • Your review should consist of a critical examination of the article including: o Is the article well written and organized? o Is the research relevant, interesting and original? o A synthesis of the main argument, thesis statement, literature review, study findings, conclusion and/or recommendations ▪ Are they clearly stated? ▪ Logical? ▪ Convincing? ▪ Do you agree or disagree with them? ▪ Why? ▪ Any suggestions for improvement? o What did you "take away" from this article and how could you apply it to developing your own blended learning courses/programs? • The article review should be posted to your personal ***Weblog*** • You should respond to one other review posted in the ***Weblog*** of a fellow student.	Sept 25 for the critique and Oct 2 for the peer review and Oct 9 for the submission of the revised critique and colleague peer review via the Blackboard Digital Drop Box	25%
2. Weekly online discussions • Regular participation in the discussions • Moderation of a selected discussion topic • Creation and posting of a summary for your moderated discussion to the course ***Wiki***. This summary should consist of the following elements: o The one or two most important ideas that emerged from the week's online/classroom discussion? o The unresolved or contentious issues about the topic o What you learned through moderating the discussion o Key word or concept that best captures the discussion o Resources (i.e., Web sites, articles, books) that provide further information/ideas about the topic. Note: All references need to be cited using APA format (http://www.apastyle.org/)	Ongoing	25%

Description	Due	% of Grade
3. Course redesign prototype project Write a paper describing a course redesign prototype. The report, written in APA style, should include the rationale and theoretical framework that you used for your course redesign prototype as well as a plan to evaluate the effectiveness of the implementation of your redesign. Ideas for your prototype scenario can be drawn from our course discussions, readings, personal experience and other resources. You are encouraged to negotiate specific intentions with respect to your redesign scenario with the course instructors. A rubric for the evaluation of this project will be created in class. You are required to submit a proposal and gain approval from the course instructor before beginning work on your project. And, you are required to provide a brief overview presentation of your project to your classmates.	Proposal due October 16th, Class presentation on November 27th, Paper due December 7th	50%

Additional Notes:

Students are advised to become familiar with the Faculty of Graduate Studies policies and the University of Calgary support services in these areas: intellectual property, academic integrity, plagiarism, research ethics, effective writing, and English language proficiency. Information about these topics is available through the following links:

http://www.grad.ucalgary.ca/Policies%20and%20Procedures.aspx

http://www.ucalgary.ca/honesty/

http://www.ucalgary.ca/research/compliance/ethics/

GRADING

Grade	Grade Pt. Value	Description
A+	4.0 (95-100)	**Outstanding**
A	4.0 (90-94)	**Excellent** • Superior performance showing comprehensive understanding of subject matter • Exceeds one or more of the assigned objectives • Assignments reflect creativity and ingenuity • Assignments demonstrate superior understanding of blended learning concepts
A-	3.7 (85-89)	**Very Good Performance**
B+	3.3 (80-84)	**Good Performance** • Meets all the assigned objectives • Effectively applies the processes and strategies discussed during the course
B	3.0 (75-79)	**Satisfactory Performance** ***Note:*** *The grade point value (3.0) associated with this grade is the minimum acceptable average that a graduate student must maintain throughout the program as computed at the end of each year of the program.*
B-	2.7 (70-74)	**Minimum pass for students in the Faculty of Graduate Studies** ***Note:*** *Students who accumulate two grades of B- or lower may be required to withdraw from their program by the Faculty of Graduate Studies, regardless of their grade point average.*
C+	2.3 (65-69)	**All grades below B- are indicative of failure at the graduate level and cannot be counted toward Faculty of Graduate Studies course requirements.**
C	2.0 (62-64)	
C-	1.7 (59-61)	
D	1.0 (50-58)	
F	0 (49 or less)	

COURSE SCHEDULE

The following topic areas will be covered in this course:

Week	Topic & Description
Sept 11	**Culture, Challenges and Change** Introduction to the course and an exploration of the context that has spawned the growing interest in the development of blended learning opportunities for public education and corporate training. • Blended learning described • Blended approaches • Challenges • Change

Sept 18 (Elluminate Session)	**Communities of Inquiry**
	An overview to the community of inquiry framework that can provide the roadmap for the integration of face-to-face and online learning activities.
	• Conceptual foundation
	  o purposeful , open and disciplined inquiry
	• Community of inquiry
	  o Social, cognitive and teaching presence
	• Real and virtual communities

Sept 25	**Redesign Scenarios** Development of course and/or program redesigns for blended learning. • Small class redesign • Large enrollment introductory courses • Project based courses

Oct 2	**Guidelines to Redesign**
	Fusing approaches and strategies to develop practical guidelines for course redesign:
	• New Approaches
	  o asynchronous connectivity
	  o deep and surface; intended outcomes and context
	  o best practices; no recipes
	• Applying Principles (strategies)
	  o design
	  o facilitation
	  o direct instruction

Oct 9	**Strategies & Tools**
	Discussion and demonstration of specific techniques and tools to engage students in a collaborative and reflective blended learning experience
	• Planning and design strategies
	  o Planning framework
	  ▪ description and rationale for strategies
	  ▪ course structure and expectations
	  ▪ support and resources
	• Facilitation strategies
	  o Before a face-to-face session
	  o During a face-to-face session
	  o Between face-to-face sessions
	  o Next face-to-face session
	• Direct instruction and assessment strategies and tools
	  o Discussion forums
	  o Web tools
	  o Classroom assessment strategies
	  o Assessment rubrics for student assignments

Oct 16 (Elluminate Session)	**Blended Learning Professional Development** An examination of professional development programs required to initiate and sustain blended learning course redesign. • Mind shifting • Faculty learning cycles and communities • Systematic and sustained support • Blended approaches to professional development
Oct 23	**Evaluation** • Formative and summative evaluation procedures and tools for your course redesign project
Oct 30	**Leadership and Organizational Change** A discussion of the leadership and organizational support required to trigger change within an institution. • Changing leadership approaches • Leadership characteristics • Leadership and instructional approaches • Institutional change scenario • Leadership and action

Nov 6 (Elluminate Session)	**Future Visioning** • Era of engagement • Transformation issues • Opportunities and threats
Nov 13	**Course Redesign Prototype Projects** • Support for the development of your course redesign prototype projects
Nov 20	**Course Redesign Prototype Projects** • On-going support for the development of your course redesign prototype projects
Nov 27 (Elluminate Session)	**Course Redesign Prototype Project Presentations** • Class presentations of your course redesign project with opportunities for formative feedback from your peers
Dec 4	**Course Wrap Up & Final Thoughts**

Academic Accommodation

Students with a disability, who require academic accommodation, need to register with the Disability Resource Centre (MC 295, telephone 220-8237). Academic accommodation letters need to be provided to course instructors no later than fourteen (14) days after the first day of class. ***It is a student's responsibility to register with the Disability Resource Centre and to request academic accommodation, if required.***

Campus Security provides a range of services intended to promote and facilitate a safe and secure learning and living environment, e.g. the SafeWalk program for students attending classes on campus. For more information please visit http://www.ucalgary.ca/security/ or telephone (403) 220-5333.

The Freedom of Information Protection of Privacy Act prevents instructors from placing assignments or examinations in a public place for pickup and prevents students from access to exams or assignments other than their own. Therefore, students and instructors may use one of the following options: return/collect assignments during class time or during instructors'

office hours, students provide instructors with a self-addressed stamped envelope, or submit assignments, or submit/return assignments as electronic files attached to private e-mail messages.

APPENDIX D

STUDENT CONSENT FORM

Name of Researcher, Faculty, Department, Telephone & Email:

Zehra Akyol
Research Assistant
The Teaching & Learning Centre
220-7847 - zakyol@ucalgary.ca

Supervisor.

Dr. D. Randy Garrison
Director and Professor
The Teaching & Learning Centre
garrison@ucalgary.ca

Title of Project:

Examination of Teaching Presence, Social Presence, Cognitive Presence, Satisfaction and Perceived Learning in Online and Blended Course Contexts

This consent form, a copy of which has been given to you, is only part of the process of informed consent. If you want more details about something mentioned here, or information not included here, you should feel free to ask. Please take the time to read this carefully and to understand any accompanying information.

The University of Calgary Conjoint Faculties Research Ethics Board has approved this research study.

Purpose of the Study:

This study will investigate application of Community of Inquiry Framework developed by Garrison, Anderson and Archer (2000). The three core elements of the framework, teaching presence, social presence and cognitive presence will be examined in relation to online learning and satisfaction. The purpose of this research study is to find out the differences on teaching, social and cognitive presences between online and blended course contexts and how these three presences influence students' perceived learning and satisfaction. In order to understand patterns of these three presences in blended learning environment, you are invited to be a participant to help us to explore these dynamics.

What Will I Be Asked To Do?

If you wish to participate in the study, you will be invited to complete the Community of Inquiry survey and to participate in a half an hour interview at the end of semester. The questionnaire will be deployed through a web site which takes about 15 minutes to complete. The interviews will be conducted through Elluminate Live and the meetings will be arranged according to your schedule. There will not be any follow up.

Participation in this study is voluntary; you may refuse to participate altogether, you may refuse to participate in parts of the study or you may withdraw from the study at any time.

What Type of Personal Information Will Be Collected?

All participants shall remain anonymous in this study. As a participant in this research, please be assured that your contributions will be kept confidential and your anonymity will be protected. All data gathered during the process of this research will be kept under security and, when the study is complete, will be shredded.

The transcriptions of your discussion postings will be analyzed if you allow me to use those as data. The discussions postings will be analyzed only in terms of frequencies of each presence occurrence. The content of a discussion posting is not an interest of this study.

Should you agree to complete online survey, you will be asked to provide your name, gender, age, educational program, and previous experience in online/blended learning environments. This information will be used in order to provide a detailed description and to explore the factors that may affect sense of community of inquiry.

There are several options for you to consider if you decide to take part in this research. You can choose all, some or none of them. Please put a check mark on the corresponding line(s) that grants me your permission to:

I consent to complete the questionnaire:	Yes: ___ No: ___
I consent to participate in a follow-up interview:	Yes: ___ No: ___
I grant permission to be collected of my discussion postings:	Yes: ___ No: ___
I wish to remain anonymous:	Yes: ___ No: ___

Are there Risks or Benefits if I Participate?

There are no foreseeable risks, harms, or inconveniences to you as a participant in this research study. The benefits are that participation in the interview will provide you with an opportunity to reflect on your online learning experience; to share your ideas and insights about course design; and to provide comments and suggestions for improving future offerings of the online courses.

What Happens to the Information I Provide?

Participation is completely voluntary, anonymous and confidential. You are free to discontinue participation at any time during the study. No one except the researcher and her supervisor will be allowed to see or hear any of the answers to the questionnaire or the interview record. Only group information will be summarized for any presentation or publication of results. All data will be stored on a secure Learning Commons server. This data will be stored for an extended period of time (until it is deemed irrelevant) so that on-going course section comparisons can be made.

Signatures (written consent)

Your signature on this form indicates that you 1) understand to your satisfaction the information provided to you about your participation in this research project, and 2) agree to participate as a research subject.

In no way does this waive your legal rights nor release the investigators, sponsors, or involved institutions from their legal and professional responsibilities. You are free to withdraw from this research project at any time. You should feel free to ask for clarification or new information throughout your participation.

Participant's Name: (please print) _____

Participant's Signature _____Date: _____

Researcher's Name: (please print) _____

Researcher's Signature: _____Date: _____

Questions/Concerns

If you have any further questions or want clarification regarding this research and/or your participation, please contact:

Ms. Zehra Akyol

The Teaching & Learning Centre

(403) 220-7847

zakyol@ucalgary.ca

Dr. D. Randy Garrison
Director and Professor
The Teaching & Learning Centre
garrison@ucalgary.ca

If you have any concerns about the way you've been treated as a participant, please contact Bonnie Scherrer, Ethics Resource Officer, Research Services Office, University of Calgary at (403) 220-3782; email bonnie.scherrer@ucalgary.ca.

A copy of this consent form has been given to you to keep for your records and reference. The investigator has kept a copy of the consent form.

CURRICULUM VITAE

PERSONAL INFORMATION

Surname, Name: Akyol, Zehra

Nationality: Turkish (TC)

Date and Place of Birth: 2 February 1980, Samsun

Marital Status: Single

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EDUCATION

Degree	Institution	Year of Graduation
BS	Uludag University Comp. Educ. & Inst. Tech.	2003

WORK EXPERIENCE

Year	Place	Enrollment
Jan, 2004 – Present	METU – CEIT	Research Assistant
Aug, 2007 – Aug, 2008	University of Calgary Teaching & Learning Centre	Research Assistant
Sept. 2003 -Jan. 2004	Adiyaman Vocational High School	Computer Teacher

PUBLICATIONS

Book Chapters

1. Inal, Y., Akyol, Z. & Erden, O. (2008). Technology Access Points in Turkey: A Case Study on Internet Cafés and Their Roles in Society. In T. Kidd & I. Chen (Eds.) *Social Information Technology: Connecting Society and Cultural Issues*. IDEA Group Reference.

2. Akyol, Z., & Garrison, D. R. (in press). Community of Inquiry in Adult Online Learning: Collaborative-Constructivist Approaches. In T. T. Kidd (Ed.), *Online*

Education and Adult Learning: New Frontiers for Teaching Practices (pp.). Hershey, PA: IGI Global.

Articles

1. Akyol, Z. & Vaughan, N. & Garrison, D.R. (in press). The impact of course duration on the development of a community of inquiry. *Interactive Learning Environments,*

2. Akyol, Z., & Garrison, D. R. (in press). Understanding Cognitive Presence in an Online and Blended Community of Inquiry: Assessing Outcomes and Processes for Deep Approaches to Learning. *British Journal of Educational Technology*,

3. Garrison, D.R. & Akyol, Z. (2009). Role of Instructional Technology in the Transformation of Higher Education. *Journal of Computing in Higher Education,* 21(1), 19-30.

4. Akyol, Z., Garrison, D.R. & Ozden. M.Y. (2009). Development of a Community of Inquiry in Online and Blended Learning Contexts. *Procedia - Social and Behavioral Sciences*, 1(1), 1810-1819.

5. Akyol, Z., & Garrison, D. R. (2008). The development of a community of inquiry over time in an online course: Understanding the progression and integration of social, cognitive and teaching presence. *Journal of Asynchronous Learning Networks*, 12 (2-3), 3-23.

Conference Proceedings

1. Akyol, Z. (2007). The E³D Research Model for Instructional Technology. In C. Montgomerie & J. Seale (Eds.), *Proceedings of World Conference on Educational Multimedia, Hypermedia and Telecommunications 2007* (pp. 4571-4575). Chesapeake, VA: AACE.

2. Akyol, Z. & Cagiltay, K. (2007). The Media-Method Debate Revisited. In *Proceedings of World Conference on Educational Multimedia, Hypermedia and Telecommunications 2007* (pp. 4576-4583). Chesapeake, VA: AACE.

3. Akyol, Z., Simsek, H. & Ozden, M. (2007). The "Smart Classroom": What about instructors' perceptions?. In *Proceedings of World Conference on Educational Multimedia, Hypermedia and Telecommunications 2007* (pp. 1317-1325). Chesapeake, VA: AACE.

4. Akyol, Z. & Karaaslan, H. (2007). Turkish Undergraduates Perceptions of Distance Education. In G. Richards (Ed.), *Proceedings of World Conference on E-Learning in Corporate, Government, Healthcare, and Higher Education 2007* (pp. 6724-6730). Chesapeake, VA: AACE.

5. Akyol, Z. (2007). Evaluation of an Online Course from a Theoretical Perspective. In G. Richards (Ed.), *Proceedings of World Conference on E-Learning in*

Corporate, Government, Healthcare, and Higher Education 2007 (pp. 197-204). Chesapeake, VA: AACE.

Presentations

1. Akyol, Z., Garrison, D. R., & Vaughan, N. (2008). Online and blended learning communities of inquiry: Examining teaching, social and cognitive presence patterns. *Canadian Network for Innovation in Education Conference,* Banff, April.

2. Akyol, Z., & Garrison, D. R. (2008). Role of time on community of inquiry. *Canadian Network for Innovation in Education Conference*, Banff, April.

3. Akyol, Z. (2008). Community of Inquiry in Online and Blended Learning Contexts. *Blended Learning - Promoting Dialogue in Innovation and Practice Conference*, University of Hertfordshire, Hatfield, Herts, United Kingdom, June.

4. Akyol, Z., & Garrison, D. R. (2009). Online and Blended Learning Approaches and Outcomes. *The 7th Annual Hawaii International Conference on Education, Honolulu, January.*

5. Garrison, D.R., Ice, P. & Akyol, Z. (2009). The Online Community of Inquiry Framework: A Review of the Research and Practical Implications. *The 7th Annual Hawaii International Conference on Education, Honolulu, January.*

6. Ice, P., Akyol, Z. & Garrison, D.R. (2009). The Relationship between Instructor Socio-Epistemological Orientations and Student Satisfaction with Indicators of the Online Community of Inquiry Framework. *The 7th Annual Hawaii International Conference on Education, Honolulu, January.*

7. Akyol, Z., Vaughan, N. & Garrison, D. R., (2009). The Impact of Course Duration on the Development of a Community of Inquiry. *CAL'09 Learning in Digital Worlds, Brighton, UK, March.*

8. Akyol, Z., Garrison, D.R. & Ozden, M.Y. (2009). Development of a Community of Inquiry in Online and Blended Learning Contexts. *World conference on Educational Sciences,* North Cyprus, February, 2009.

HOBBIES

Photography, Hiking, Biking, Movies, Theatres