AN EXAMINATION OF TEACHING PRESENCE AND THE SENSE OF COMMUNITY ON PERCEIVED STUDENT LEARNING

By

SUSAN ELIZABETH JINKS

A DISSERTATION PRESENTED TO THE GRADUATE SCHOOL
OF THE UNIVERSITY OF FLORIDA IN PARTIAL FULFILLMENT
OF THE REQUIREMENTS FOR THE DEGREE OF
DOCTOR OF PHILOSOPHY

UNIVERSITY OF FLORIDA

2009

To the three men in my life- Kevin, Kyle, and Grady

ACKNOWLEDGMENTS

I can attest that writing a dissertation is not an easy task. The task is even more difficult when mixed with starting a family, moving to another state, and starting a new career. With this in mind, I am most thankful to everyone who cheered me on and helped me overcome every hurdle I encountered.

I would like to thank my husband, Kevin, who encouraged me to start a doctorate program and provided moral support throughout the journey. You had faith in me even when I had doubts.

I would like to thank my two sons, Kyle and Grady, who joined our family during my course of study. You provided reasons to procrastinate while at the same time creating a purpose for completing my dissertation.

I would like to thank my family, friends, and peers. I was motivated by your continual words of encouragement.

I would like to thank the educational technology department at the University of Florida, who provided me with the definition and example of a scholar. Each of my fellow graduate students made me think harder than I have ever thought before.

I would like to thank Erik Black who handed me the first article on the sense of community just because he thought I would find it interesting.

I would like to thank my committee, Dr. Packer, Dr. Dawson, Dr. Pace, and Dr. Vandiver, who understood the complexity of my life and its impact on the timeline for completing my program of studies. I was motivated by all of you and appreciate all of the time you put into my scholarly development. Thanks go out to Dr. Dawson who gave me the opportunity to teach undergraduate students which turned out to be an amazing experience. Thanks go out to Dr. Pace who agreed to join my committee without ever meeting me in person so I appreciate your

openness to help graduate students. Thanks go out to Dr. Vandiver who introduced me to the culture of the University of Florida and supported my decision to start a doctorate program. Lastly, special thanks to Dr. Packer who provided quick responses, clear communication, and constant encouragement. Without the help of Dr. Packer writing a dissertation from another state would have been impossible.

Go Gators!

TABLE OF CONTENTS

LIST OF TABLES

LIST OF ABBREVIATIONS

CMC	Computer Mediated Communication
CCS	Classroom Community Scale
COI	Community of Inquiry
TPS	Teaching Presence Scale

Abstract of Dissertation Presented to the Graduate School
of the University of Florida in Partial Fulfillment of the
Requirements for the Degree of Doctor of Philosophy

AN EXAMINATION OF TEACHING PRESENCE AND THE SENSE OF COMMUNITY ON PERCEIVED STUDENT LEARNING

By

Susan Elizabeth Jinks

May 2009

Chair: Colleen Swain Packer
Major: Curriculum and Instruction

The purpose of the study was to determine if the constructs of teaching presence and the sense of community function as predictors of perceived student learning in an online course. Each participating online student completed an online survey comprised of an informed consent, an item regarding their perception of learning (Richmond et al., 1987), the Teacher Presence Scale (Shea et al., 2005), the Classroom Community Scale (Rovai, 2001), student and course characteristic questions, and open-ended questions. The responses were transformed into three variables following the procedures set out by the authors of each instrument. Survey results were analyzed using a multiple linear regression, a correlation matrix, and a series of t-tests and ANOVAs. The data brings to light the importance of both teaching presence and the sense of community in an online course because the two constructs were able to predict 45.1% of the variance for perceived student learning. There were two statistically significant group differences in the perceived student learning score. First, students enrolled in eight-week courses reported their learning higher than students enrolled in sixteen-week courses. Second, students over 49 reported their learning higher than students in the 20-29 age group.

The findings and the implications from this study are an essential stepping-stone to the future of online learning. While the sample size from this study was small compared to the

number of students enrolled in online courses around the world, the study was able to bring to light two valuable constructs that have a predictive relationship with student learning. This connection to student learning is invaluable. This research study found that teaching presence and the sense of community have the ability to predict 45.1% of the variance of perceived student learning. Simply put, student learning, irrespective of the format of the course, occurs through interactions with a teacher and interactions with students.

CHAPTER 1
INTRODUCTION

Susan Patrick (Marikar, 2006), President of the North American Council on Online Learning stated, "I think that in the future, there won't be any differentiation between where the education comes from. We're not going to call it online learning, we're just going to call it learning." This sentence captures one of the major changes occurring in the educational field, that of online education. However, in order to effectively use the online medium, it is critical that constructs intertwined with online education be explored. This dissertation is such a study as it explored two critical components and their influence on perceived student learning. Specifically, this dissertation surveyed students enrolled in online courses to determine if two constructs: teaching presence and the sense of community, can predict perceived student learning in an online course.

The first construct, teaching presence, has received considerable attention in research studies and has been shown to be a key factor in successful online courses (Dennen, 2006; Shea, Li & Pickett, 2006; Garrison & Cleveland-Innes, 2005). Using the term "teaching presence" rather than "teacher presence" acknowledges that the dissemination and creation of knowledge may be provided by students in the course, in addition to being provided by the teacher. The element of teaching presence has been conceptualized to have three components: instructional design and organization; direct instruction; and facilitating discourse (Garrison, Anderson & Archer, 1999).

The construct of teaching presence is drawn from the Community of Inquiry (COI) framework, which was developed by Garrison, Anderson, and Archer (1999) to study online learning. In the Community of Inquiry framework, the authors suggest that social presence, cognitive presence, teaching presence, and their interrelationships are essential for a successful

higher educational experience. Teaching presence remains the least-researched presence, even though its importance is considered to be equal to that of both cognitive presence and social presence (Arbaugh & Hwang, 2006).

The second construct, sense of community, includes the "feeling that members have of belonging, a feeling that members matter to one another and to the group, that they have duties and obligations to each other and to the school, and that they possess shared expectations that members' educational needs will be met through their commitment to shared learning goals" (Rovai, 2002b, p.322). According to Rovai, a classroom community is a specific type of community with a bounded educational setting and a specific purpose for learning that exists for a finite period of time (Rovai, 2001). When community is viewed as what people do together, rather than where they do it, community becomes separated from geography (Wellman, 1999), making it a reasonable goal for an online course. A student's sense of community as described by Rovai's research has two parts: learning and connectedness (Rovai, 2002b). Rovai describes learning as "the feeling that knowledge and meaning are actively constructed within the community, that the community enhances the acquisition of knowledge and understanding, and that the learning needs of its members are being satisfied" (Rovai, 2002b, p.322). Connectedness focuses on the trust, feeling of belonging, and cohesion of a group (Rovai, 2002b).

The constructs of teaching presence and community are recurring themes in research on higher education and online learning. For example, these themes are embedded in Chickering and Gamson's (1987) seven principles of good practice in undergraduate education, Moore's (1989) theory of transactional distance, and the 1999 National Academy of Sciences report How People Learn: Brain, Mind, Experiences and School. This research suggests that teaching presence and community are important aspects to consider when examining the complexities

associated with the practices of the teacher, the interactions (learner-content, learner-learner, and learner-instructor) that occur within an educational setting, and the learning environment.

The roles of teaching presence and the sense of community have not been fully explored in online courses. Some studies (Arbaugh & Hwang, 2006; Mandernach, Gonzales & Garrett, 2006; Shea, Li & Pickett, 2006) have focused on the effects of teaching presence, while others (Liu, Magjuka, Bonk & Lee, 2007; Ouzts, 2006; Rovai, 2001) have focused on the effects of community; however, few studies (Shea, Swan, Li, & Pickett, 2005) have focused on both, simultaneously. Moreover, the outcome of student learning is an essential focus in educational settings; accordingly, research aimed at informing online teachers or administrators of higher education should consider the impact of the online student's learning. Therefore, the purpose of this study is to determine if teaching presence and the sense of community act as predictors of perceived student learning in online learning courses.

Study Questions

This study focuses on one question with three sub-questions. In addition, an analysis of the student and course characteristics of the sample will be reviewed to determine if there are any statistically significant differences between groups. The questions guiding the study are:

1. How do teaching presence and the sense of community function as predictors for perceived student learning in an online course?

    a. What is the strength of the relationship between teaching presence and the sense of community?

    b. What is the strength of the relationship between teaching presence and perceived student learning?

    c. What is the strength of the relationship between the sense of community and perceived student learning?

Significance of the Study

In the fall semester of 2007, the number of students enrolled in at least one online course reached nearly 3.9 million students (Allen & Seaman, 2008), an increase of 12.9% from the previous year. While online learning is experiencing a growth rate of 12.9% annually, overall higher education is only experiencing a growth rate of 1.2% annually (Allen & Seaman, 2008). The rate of growth for online learning validates the demand for administrators at colleges and universities to offer online courses. The challenge for teachers working in the online environment is to offer equivalent or even superior, learning experiences to online students as they offer to traditional, face-to-face students. New technologies have changed the availability and the functionality of communication and learning tools available for online courses. These new technologies provide ways for communities of learners and teachers to interact regardless of physical location (Wilson & Stacey, 2003).

The use of the Internet as a medium for learning has rapidly spread across colleges, universities, and K-12 education. As more and more institutions use the online environment for teaching, it is necessary for an established research agenda to guide the developments of online learning. In order for the research to keep pace with enrollment, a shift in the research agenda is necessary. Research needs to move beyond comparative studies of traditional and online courses to research studies that seek to better understand the online learning environment and how the medium affects the role of the online teacher, the knowledge a student gains from a course, and the development of community within the course (Shea, Li, & Pickett, 2006).

This study informs online teachers and stakeholders about the possible predictive relationship between teaching presence and the sense of community with students' perceived learning in an online course. The results from this study provide a research base from which educators can draw as they make decisions about online course design and pedagogy to enhance

the quality of the online learning experience for every student. This study provides evidence that a relationship exists between teaching presence and learning; hence, teachers can gain pedagogical insight to increase teaching presence. As a relationship exists between the sense of community and learning, teachers can implement pedagogy proven to promote the development of community. This study also shows there is interaction between teaching presence and the sense of community, so teachers can work to emphasize both constructs in their course in order to maximize student learning. In addition to informing online teachers, the study results can help administrators at colleges and universities develop rationales for support structures that promote quality-learning experiences for every student, design training specific for online learning, and develop methods for evaluating online learning.

Moving the Research Agenda Forward

The novelty of online learning has passed, while anecdotal reports of single courses were important at the advent of online education, such reports no longer provide enough information to make valid and reliable claims that can be generalized and conveyed to teachers. In addition, comparison studies between online and traditional courses are expansive, and typically conclude that the medium has at worst a neutral impact on student performance (Arbaugh & Hiltz, 2005). Arbaugh and Hiltz (2005) suggest that future research should move away from comparison studies and focus rather on qualities of effective online learning.

After conducting a vast review of studies focusing on teaching presence and sense of community, the areas of research design which must be addressed include: the low number of participants (Waltonen-Moore, Stuart & Newton, 2006; Picciano, 2002; Anderson, Rourke, Garrison & Archer, 2001; Rovai, 2001; Lally & Barrett, 1999), the low number of participants in sub-categories (Wang, Sierra & Folger, 2003), the poor return rate on instruments (Ouzts, 2006; Stein, Wanstreet, Calvin, Overtoom, & Wheaton, 2005), the poor description of the methodology

(Lally & Barrett, 1999), and populations drawn from a single course, discipline or institution (Waltonen-Moore et al., 2006; Picciano, 2002; Rovai, 2001). Moving forward, future research should aim to study a large population drawn from multi-course, multi-discipline, and/or multi-institutional samples (Arbaugh & Hiltz, 2005), while designing methods that yield a good return rate on instruments. This study attempted to address several of the issues associated with moving the online education research agenda forward.

Methodology

A quantitative study was conducted applying a multiple linear regression model, correlation coefficients, a series of T-tests, and a series of ANOVAs to analyze the data collected from an online survey of comprised of three parts: Teaching Presence Scale (Shea, Li, Swan, & Pickett, 2005), the Classroom Community Scale (Rovai, 2001), and perceived student learning (Richmond, Gorham, & McCroskey, 1987). The online survey consisted of fifty-one questions, which include: one informed consent question, one question measuring perceived student learning, twenty questions measuring the sense of community, seventeen questions measuring teaching presence, eleven questions gathering student and course information, and two open-ended questions.

For this study, the dependent variable was perceived student learning. The independent variables were teaching presence and the sense of community. The analysis of the multiple regression equation helped determine whether teaching presence and the sense of community can act as predictors of perceived student learning in an online course. The correlation coefficients explained the strength of relationship between (a) teaching presence and the sense of community, (b) perceived student learning and teaching presence, (c) and perceived student learning and the sense of community. The t-tests and the ANOVAs determined statistically significant group differences in the scores for perceived student learning.

Definition of Terms

DISTANCE EDUCATION AND LEARNING. A general term that includes online learning. In addition, the term may include correspondence courses and other forms of learning when the learners are separated by a distance.

ONLINE EDUCATION AND LEARNING. Courses taught by means of the Internet. Blended and hybrid classes will not be considered as online education and learning.

SENSE OF COMMUNITY. A feeling that members have of belonging, a feeling that members matter to one another and to the group, that they have duties and obligations to each other and to the school, and that they possess shared expectations that members' educational needs will be met through their commitment to shared learning goals (Rovai, 2002b, p.322).

TEACHING PRESENCE. One element of the Community of Inquiry model which describes the three functions of a teacher: instructional design and organization, direct instruction, and facilitating discourse (Garrison, Anderson & Archer, 1999).

Limitations

This research study relies on correlations. At the end of the study, the relationship between the teaching presence and the sense of community (IVs) and perceived student learning (DV) was determined, but the underlying causal mechanism is not definitive. In addition, there is always a possibility of other variables influencing perceived student learning that were not included in the model.

Further, knowing how teaching presence and sense of community can act as predictors of perceived student learning is informative to stakeholders of online education; however, this research study does not aim to determine the teaching practices or technologies that positively affect teaching presence and the sense of community in an online course.

The return rate for the survey was less than 20% with a sample size under 150. Therefore, additional studies should be performed in order to increase the return rate and sample size.

Finally, the research uses a non-random convenience sample. This study will need to be replicated with other samples to determine whether the results are generalizable or if the results

demonstrate an anomaly with graduate education students in general or with graduate students in the College of Education at the University of Florida.

Delimitations

The study was conducted during the fall semester of 2008 using online students enrolled in courses at the College of Education at the University of Florida. All students enrolled in an online course after the four-day add/drop period were eligible to complete the survey.

Identifying student data such as the student's degree program were not tracked to his or her specific response set. Therefore, more explicit analyses could not be made about characteristics of the study population.

Organization of the Study

In the remaining chapters of this dissertation, the theoretical framework that guided the design of this study from Chapter 2 is offered. In addition to the theoretical framework, a review of the current literature on teaching presence and the sense of community is presented along with an explanation of studies that have implemented the instruments employed in this study. The history of the instruments is also covered in Chapter 2. The validity and reliability of the instruments, as well as a description of how each research question is answered, will be the focus of Chapter 3. The data analysis is presented in the order of the questions in Chapter 4. Last, a discussion of the findings, the implications and recommendations for future studies is described in Chapter 5. Following Chapter 5 will be a copy of the informed consent, a copy of the instrument, and the bibliography.

CHAPTER 2
REVIEW OF LITERATURE

Introduction

The recurring themes of teaching presence and the sense of community are evident in research on higher education and online learning. The first construct, teaching presence, is one element of the Community of Inquiry model (Garrison, Anderson & Archer, 1999) that describes the three functions of a teacher: instructional design and organization, direct instruction, and facilitating discourse. The second construct, sense of community, describes the "feeling that members have of belonging, a feeling that members matter to one another and to the group, that they have duties and obligations to each other and to the school, and that they possess shared expectations that members' educational needs will be met through their commitment to shared learning goals" (Rovai, 2002b, p.322). The themes of teaching presence and the sense of community are also embedded in research surrounding higher education, including: Chickering and Gamson's (1987) seven principles of good practice in undergraduate education; Moore's (1989) theory of transactional distance; and the 1999 National Academy of Sciences report *How People Learn: Brain, Mind, Experiences and School* (Bransford, Brown, & Cocking, 1999).

This research suggests that teaching presence and the sense of community are important aspects to consider when examining the complexities associated with the roles and actions of the teacher, the interactions of the class (learner-content, learner-learner and learner-instructor), and the learning environment. The seven principles of good practice in undergraduate education imply that teaching presence and the sense of community are important aspects within the roles and actions of the teacher. Moreover, the theory of transactional distance identifies teaching presence and the sense of community as important aspects of the interactions of the class. Furthermore, *How People Learn* demonstrates the importance of teaching presence and the sense

of community in the creation of a learning environment. These theories and frameworks provide the foundation for studying teaching presence and the sense of community simultaneously, as well as the basis for studying the use of teaching presence and the sense of community as predictors of perceived student learning in an online course (Table 2-1).

Seven Principles of Good Practice in Undergraduate Education

In 1987, Chickering and Gamson published a list of seven principles of good practices in undergraduate education which have collectively become a benchmark for effective teaching and learning in higher education (Robertson, Grant, & Jackson, 2005). It should be noted that, although published by Chickering and Gamson, the list was generated by a group of scholars known for research on the impact of the college experiences and organizational, economic, and policy issues in higher education (Chickering & Gamson, 1999). The list of principles of good practices includes: encouraging student-faculty contacts; encouraging cooperation among students; encouraging active learning; giving prompt feedback; emphasizing time on task; communicating high expectations; and respecting diverse talents and ways of learning (Chickering & Gamson, 1987). Twenty years later, this list of good practices is still a valuable tool for teachers and provides a foundation for the design and implementation of traditional, face-to-face courses, as well as for research on online courses (Hutchins, 2003; Newlin & Wang, 2002) and research in graduate education (Buckley, 2003; Graham et al., 2000).

The reader will notice that in each of the seven practices the roles and actions of the teacher are described. The teacher should encourage student-faculty contact; encourage cooperation among students; encourage active learning; give prompt feedback; emphasize time on task; communicate high expectations; and respect diverse talents and ways of learning. Additionally, one indirect result may include students reporting that community was developed through the encouragement of student and faculty contact, the cooperation among students, and

the use of active learning. Several of these principles share characteristics with both teaching presence and the sense of community within the roles and actions of the teacher in online courses.

Moore's Theory of Transactional Distance

While the seven principles of good practice in undergraduate education were originally designed for the traditional, face-to-face course, Moore's theory of transactional distance was originally designed for a distance education course targeting adult learners of all ages. In 1980, when the theory was published, the typical distance education course was a correspondence course. While much has changed in the field of distance education, the theory is still a valuable tool for studying any type of distance education, including online learning (Lally & Barrett, 1999).

The theory of transactional distance articulates the distance of understanding and perceptions, otherwise described as the psychological and communication space that needs to be crossed between the teacher and the student in a distance education course. The space is not a geographical separation, but rather a pedagogical concept (Moore, 1997). The transactional distance has to be overcome by teachers and students if effective learning is to take place (Moore & Kearsley, 1996). If not crossed, this space can potentially create misunderstandings between the teacher and the student which may lead to a student feeling disconnected. When the transactional distance is small, there is greater student involvement and more open communication, which in turn leads students to feel a sense of connectedness and a sense of community.

The theory of transactional distance includes dialogue, structure, and student autonomy. Dialogue refers to the interaction between the teacher and the student when "one gives instruction and the other one responds" (Moore, 1991). Dialogue may be influenced by the

teacher's philosophy of learning, the teacher's personality, the student's personality, the subject of the course, or the course environment (Moore, 1997). The structure is described as the elements of the course design, which includes the rigidity or flexibility of the course objectives, teaching strategies, and the evaluation methods (Moore, 1997). In 1996, Moore and Kearsley added student autonomy to the theory of transactional distance. Student autonomy may be an interaction with dialogue and structure, and includes the level of student control over the course. The challenge for the distance education teacher is to find the appropriate opportunity and quality of dialogue between the instructor and the student, as well as the appropriate structure for learning material for each student enrolled in the course.

In 1989, Moore suggested that transactional distance and student autonomy should be further studied with a focus on the interactions of the course. These interactions include that of the learner with the content; the learner with other learners; and the learner with the instructor. All of these interactions provide opportunities for student engagement. While all three types of interactions are important, they may operate differently when differing media are involved in teaching.

Interaction with content, peers, and the teacher have been occurring in traditional, face-to-face classrooms for many years. Therefore, teachers will not need to change their theoretical framework for teaching or their pedagogical knowledge; they may only need to focus on how the medium of the learning environment affects these interactions. With this in mind, Moore notes it is important that educators organize their courses to address each type of interaction and to ensure the inclusion of interactions which are most appropriate for the specific subject area and needs of the learners (Moore, 1989).

Learner-content interaction is the cornerstone of education. Students need to interact with the course content in order to change their understanding, change their perspective, and change the cognitive structures in their minds (Moore, 1989). In the earliest forms of distance education, courses tended to focus solely upon learner-content interactions with the understanding that adult learners are often self-directed in their learning approaches. Prior to the advent of online learning, the lack of available technologies made learner-content interactions the most valuable occasions for student learning. These interactions occur as a product of the course design and course facilitation.

Learner-learner interactions can occur with or without the teacher. This type of interaction can be a valuable resource in the learning process (Wallace, 2003; Moore, 1989) because it acknowledges and values the expertise of the students. Traditional students, as well as online students, value and benefit from interactions with their peers (Wallace, 2003). Learner-learner interactions can occur through discussion forums, instant messages, emails, and blogs. This list of tools is growing with the number of social networking technologies.

The interactions between the learner and the instructor are often viewed "as essential by most learners and as highly desirable by most educators" (Moore & Kearsley, 1996, p.129). The teacher is seen as a motivator for the student to learn, a knowledge provider, and an evaluator of the student's knowledge gained. The teacher may counsel, support, and encourage the student throughout the course. The level of interaction may depend on the personality of the teacher, the experience of the teacher, and the format of the course (Moore, 1989). The interactions between the student and the teacher have a larger effect on perceived learning when compared to the interactions with peers (Garrison & Cleveland-Innes, 2005). Learner-teacher interactions in an

online course can occur through assessment, discussion boards, email, chat sessions, and phone conversations.

The role of community is embedded within the learner-learner interaction, while teaching presence is established in the learner-teacher and the learner-content interactions. Moore's theory of transactional distance suggest that both teaching presence and the sense of community are valuable; however, they appear to be distinct and separate aspects of the interactions that take place in online courses.

How People Learn

While Moore (1989) focused on the importance of interactions in distance education courses, the 1999 National Academy of Sciences report concentrated on the learning environment. In *How People Learn: Brain, Mind, Experiences and School*, the editors (Bransford et al., 1999) suggest that new knowledge on how people learn should affect the design of the learning environment. The editors concluded that educators need to reassess what is taught, how it is taught, and how it is assessed. Additionally, Bransford et al. (1999) indicate that learning environments need to simultaneously support a learner-centered, knowledge-centered, assessment-centered, and community-centered approach to learning. These four goals of the learning environment are connected to the processes of learning, transfer, and competent performance (Bransford et al., 1999).

First, a learner-centered environment is one that appreciates the knowledge and experience that students bring to the learning environment. The teacher considers the knowledge, skills, attitudes, and beliefs of the learner in their lesson design, class discussions, and assignments. Second, a knowledge-centered environment considers how students make meaning of new information and subsequent transfer by focusing on the types of activities that promote understanding and metacognition. Next, an assessment-centered environment provides

opportunities for students to receive feedback as a part of the learning process. This feedback can be formal or informal, and can be teacher-directed or self-assessed. Students need to receive feedback in order to adjust their understanding and to clear up misunderstandings. Finally, a community-centered environment can refer to the classroom community, the school community, or the connections to the community in which they live. Aspects of community need to be considered in designing a learning environment because communities have different norms and these norms may have an impact on the learning process.

All aspects of the class environment can be considered a part of teaching presence because the teacher sets the tone of the class, designs the learning experience, and assesses student learning. The sense of community is espoused through the description of a learner-centered and a community-centered learning environment. In addition, the sense of community that a student feels may affect how students learn and interact within the course.

The concepts presented in *How People Learn* suggest a correlation between the construct of teaching presence and the construct of the sense of community when focusing on the learning environment of an online course.

The theories and frameworks presented in the study provide a strong foundation for continuing and expanding the research agenda on teaching presence and the sense of community in online learning. In addition, the research provides strong evidence of a correlation between the two constructs, as well as of the need for teaching presence and the sense of community to be valued practices of higher education and online learning. The following sections will elaborate on the current literature related to teaching presence and the sense of community.

Community of Inquiry

The term teaching presence is drawn from the Community of Inquiry (COI) framework, which was developed by Garrison, Anderson, and Archer (1999) to study online learning. In the

Community of Inquiry framework, the authors suggest that three "presences" (social, cognitive, and teaching) and the interrelationships among them are essential for a successful online experience in the higher education context.

The COI model builds on the work of Garrison (1997) where he argued that the Computer-Mediated Communication (CMC) format represents a new era, a post-industrial age of distance education, due to its ability to create a collaborative community of learners asynchronously. The COI model was developed from a review of literature on communications and distance education focusing on issues of text-based communication. In addition, the model, which is founded on the work of John Dewey, is consistent with constructivist approaches to learning. The model expands Garrison's (1997) argument by suggesting that CMC can only meet its potential if it includes social presence, cognitive presence, and teaching presence. In a true Community of Inquiry where all presences are included, the "tone of the messages is questioning but engaging, expressive but responsive, skeptical but respectful, and challenging but supportive" (Garrison et al., 1999, p.96).

In addition to describing the "prerequisites for a successful high educational experience" (Garrison et al., 1999, p.87), the model also provides a conceptual framework for studying CMC and computer conferencing learning experiences. A framework for studying CMC and computer conferencing is necessary to broaden the research on the new media used to deliver online courses. Educators may use the COI framework to study their own course design in an effort to develop a collaborative community of learners rather than an online course designed only for a means of downloading information from a teacher. The purpose of the COI framework is to provide a uniform methodology and possibly a theoretical foundation for studying online learning (Garrison & Arbaugh, 2007).

In the COI model, Garrison and his colleagues advocate for the teacher and students to be active members in the learning community for the purpose of enhancing the learning for everyone. The learning experience consists of both the quality of the experience and the outcomes from the experience.

Cognitive Presence

The most fundamental element of the COI model and the hallmark of success in higher education is cognitive presence (Garrison et al., 1999). Garrison et al. (1999) describe cognitive presence as "the extent to which the participants in any particular configuration of a community of inquiry are able to construct meaning through sustained communication" (p.89). The element of cognitive presence in a CMC format is based on the practical inquiry model, a general model of critical thinking developed by Garrison (1991). The practical inquiry model is based on the ideas of Dewey (1933) and his conception of practical inquiry in which reflection was seen as the "heart of the thinking process but was framed by perplexing and confused situations initially and a unified or resolved situation at the close" (p.19). The practical inquiry model starts when a student enters a state of dissonance (triggering event) and then moves into an exploration of information to make sense of the situation (exploration). From there, the student begins to integrate the information or knowledge into a coherent idea (integration) which he or she uses to apply the new idea (resolution) within the context of the course. The process is cyclical, so that when the student does not encounter success in the application of the new idea, he or she may need to start anew the process of exploration, integrations, and resolution.

Cognitive presence interacts with both social and teacher presence in a CMC format. The cognitive presence of a student may be affected by their peers' interactions (social presence) or may be affected by the design or facilitation of the course (teaching presence).

While cognitive presence is highlighted as the purpose for students enrolling in an online higher education course, social presence and teaching presence are more critical for establishing, supporting, and enhancing the educational experience.

Social Presence

Social presence is described as "the ability of participants in the Community of Inquiry to project their personal characteristics into the community, thereby presenting themselves to the other participants as 'real people'" (Garrison et al., 1999, p.89). Social presence in an online course is inherently different from a face-to-face course due to the constraints of the Internet. In an online course, students typically present themselves through text or representative symbols created through a manipulation of text, often referred to as emoticons. In the COI model, social presence is observed through emotional expression, open communication, and group cohesion.

The primary role of social presence is as a supportive structure to cognitive presence. When a teacher or a student thinks the affective goals (course enjoyment) of the education experience are just as important as the cognitive goals, then social presence has a direct role in the success of the educational experience. When the affective goals are deemed less important than the cognitive goals by the teacher or the students, then social presence has an indirect role in supporting cognitive presence through the facilitation of critical thinking. The facilitation of critical thinking may occur asynchronously through a student's discussion board posting or through a student's response to a discussion board posting by another student. Each method provides the student with an opportunity to express an opinion or a new idea while providing the supporting arguments and the rationale for his or her thinking.

The research suggests that social presence is a strong predictor of course satisfaction (Shin, 2003; Gunawardena & Zittle, 1997; Hackman & Walker, 1990) and intent-to-persist (Shin, 2003), and has a positive relationship with perceived learning (Hackman & Walker, 1990). In

addition, social presence leads to the feelings of inclusion, control, and affection by creating a learning environment perceived as warm, collegial, and approachable (Rourke, Anderson, Garrison & Archer, 1999). The presence of these feelings facilitates the building of trust and self-disclosure within the online environment (Gunawardena, Nolla, & Wilson, 2001). Furthermore, social presence has an ability to instigate, sustain, and support cognitive and affective learning objectives by making group interactions appealing, engaging, and intrinsically motivating (Rourke et al., 1999).

Social presence may create favorable conditions for sharing and challenging ideas through critical discourse, but it does not, in and of itself, directly create cognitive presence or facilitate a deep learning approach. High levels of learning are dependent less on the quantity of interaction than on the quality, or substance, of interactions (Garrison & Cleveland-Innes, 2005); however, when social presence is lacking, the participants see the course as impersonal and the amount of information shared with others decreases (Leh, 2001) as a result.

The emphasis on social presence is often a part of the course design and course facilitation (teaching presence). The teacher of the course has a direct role in deciding how to support social presence and how to project his or her own presence in the course.

Teaching Presence

The third presence from the Community of Inquiry model, teaching presence, has received considerable attention in research studies, and has been shown to be an important element in successful online courses (Dennen, 2006; Shea, Li & Pickett, 2006; Garrison & Cleveland-Innes, 2005). The term "teaching presence" has been chosen over "teacher presence" because it may be provided by students in the course rather than solely by the individual with the title of teacher. The element of teaching presence has been conceptualized to have three components: instructional design and organization, direct instruction, and facilitating discourse.

Anderson et al. (2001) suggests that the function of teaching does not change when courses move online; however, its manifestation looks quite different online. In traditional, face-to-face courses, the presence of the teacher is established by his or her physical self upon entering the classroom. In online courses, the physical self is not observed; rather the teacher's actions inform students that the teacher is "in the room."

The first component of teaching presence, instructional design and organization, includes setting the curriculum; designing the methods for teaching and learning; establishing time parameters; utilizing the medium effectively; and establishing netiquette. In the second component, the teacher facilitates the discourse within the course. This can include identifying areas of agreement and disagreement; seeking to reach consensus and understanding; encouraging, acknowledging, and reinforcing student contributions; setting the climate for learning; drawing in participants and prompting discussion; and assessing the efficacy of the process. The facilitation of discourse has been found to be the factor most strongly associated with a student's sense of community and learning (Shea, Li, Swan & Pickett, 2005). The last component is direct instruction, which includes presenting content and questions; focusing the discussion on specific issues; summarizing discussion; confirming understanding; diagnosing misconceptions; injecting knowledge from diverse sources; and responding to technical concerns.

The research on the three-component model of teaching presence suggested by Garrison et al. (1999) is still in its infancy. At this point, researchers have reported contradictory findings. One study reported that the three components are distinct but correlated (Arbaugh & Hwang, 2006), while other researchers (Shea et al., 2006; Shea et al., 2005) point to a two-component model where direct instruction and facilitation discourse are combined and renamed "directed

facilitation" to show the amalgamation that occurs between the two components when courses are taught online.

While text-based, asynchronous online courses pose a unique challenge for the development of effective teaching presence, research has demonstrated that it can be achieved (Shea, 2006; Shea et al., 2005; Swan, 2003). Although the components of teaching presence may not be clear, it is clear that teaching presence can be a binding element in creating a community of inquiry for educational purposes (Garrison et al., 1999) because teaching presence affects how the students write their messages and to whom (Dennen, 2005). Furthermore, teaching presence is directly related to a student's sense of community (Shea et al. 2005; Wang et al, 2003), their satisfaction with the instructor (Shea et al., 2003), and their satisfaction with the course (Shea, Picket, & Pelz, 2003). Most importantly, teaching presence is directly related to students' perceived learning achievement (Shea et al., 2003; Picciano, 2002; Shin, 2003; Swan, 2001) and contributes to a deep approach to learning (Garrison & Cleveland-Innes, 2005). All of the research indicates that teaching presence is an important element for meeting the needs of students enrolled in online courses.

Research Focused on Teaching Presence

Within the COI framework, teaching presence remains the least researched presence, even though it is considered to be of equal importance as cognitive presence and social presence (Arbaugh & Hwang, 2006). One such study by Anderson and colleagues (2001) set out to develop a conceptual framework to understand, measure, and improve teaching presence. The conclusions were drawn from a content analysis of the discussion forum based on the message unit from two courses. The data analysis was completed by two raters; using Cohen's kappa, the interrater reliability for the first course was k=.84 and the second course was k=.77. The pattern of teaching presence varied considerably between the two courses. While one teacher had ample

postings, the second course had more teaching presence identifiers per post. Moreover, the second teacher used student moderators during the course and therefore had fewer postings during the weeks when student moderators were in use. Overall, this study demonstrated that the methodology used in the study was useful for its simplicity, although the methodology would be difficult to use with a larger sample.

Garrison and Cleveland-Innes (2005) found similar differences in interactions in online courses and drew two conclusions: the quantity of interactions is not as important as the quality of the interactions, and the quality of the postings by students must be a specific design goal of the course. Unlike previous studies which used content analysis, this study used a survey called the Study Process Questionnaire, which seeks to measure how students strategize their learning. The survey was completed by 75 students enrolled in four online courses. The conclusions from the study suggest that while a high level of interaction may be a reflection of group cohesion, it does not directly relate to the facilitation of meaningful learning and understanding. Furthermore, the design of the course and the teaching style of the teacher can support the shift in learning approach from surface learning to deep learning, where a student embraces and digests the learning material while searching for meaning.

The Teaching Presence Scale (TPS)

At this point, the development of methodologies for studying teaching presence is just as important as the conclusions drawn from the studies themselves. While the original methodology for studying the Community of Inquiry was content analysis, current research is moving toward quantitative studies using surveys which will support larger sample sizes and a variety of populations. Content analysis is a valuable tool for an in-depth review of discussion forum postings; however, the methodology is time-consuming and labor intensive. One alternative to content analysis is the Teaching Presence Scale (TPS), which was developed by

Shea, Li, Swan & Pickett (2005), based on the Community of Inquiry framework (Garrison et al., 1999), and created in consultation with one of the framework's original authors. The TPS is a seventeen-item survey designed to elicit response for all three components of teaching presence, which include instructional design and organization, facilitating discourse, and direct instruction.

The instructional design and organization items in this section of the TPS survey include setting curriculum, designing methods, establishing time parameters, utilizing the medium effectively, and establishing netiquette. These questions equate with several of Chickering and Gamson's principles which include: encouraging active learning, emphasizing time on task, communicating high standards, and giving prompt feedback (Shea et al., 2003). Furthermore, Moore's concepts of learner-content and learner-instructor interactions are embedded in the instructional design and organization items.

Facilitating discourse, the second section of the survey, includes the following indicators: identifying areas of agreement and disagreement; seeking to reach a consensus and understanding, encouraging, acknowledging, and reinforcing student contributions; setting the climate for learning; drawing in participants and prompting discussion; and assessing the efficacy of the process. These questions equate with Chickering and Gamson's principles of encouragement of contact between students and faculty and encouraging cooperation among students (Shea et al., 2003). In addition, facilitating discourse is critical in Bransford et al.'s concepts of knowledge-centered and community-centered environments (Shea et al., 2003). Furthermore, facilitating discourse includes Moore's concepts of learner-content interactions, learner-instructor interactions.

The third section of the TPS survey, direct instruction, includes the following indicators: presenting content and questions; focusing the discussion on specific issues; summarizing

discussion; confirming understanding; diagnosing misperceptions; injecting knowledge from diverse sources; and responding to technical concerns. These questions correspond to Chickering and Gamson's principles of encouragement of contact between students and faculty and giving prompt feedback (Shea et al., 2003). In addition, direct instruction is critical in Bransford et al.'s concepts of knowledge-centered environments (Shea et al., 2003). Furthermore, facilitating discourse includes Moore's concepts of learner-content interactions and learner-instructor interactions..

For this study, the TPS provides the measure for the independent variable, which is teaching presence. Chapter 3 provides further information on the TPS, including details on the reliability and validity of the instrument and directions for scoring the instrument.

Research Employing the Teaching Presence Survey

The first published study (Shea et al., 2005) deploying the Teaching Presence Survey included a multi-institutional study which surveyed a total of 2,036 student in 32 colleges. The students who completed the survey represented 470 instructors and 581 courses, yielding a 93% return rate. The study employed an online survey consisting of the Classroom Community Scale, the Teaching Presence scale, and demographic variables. The survey was available to students through the online course management environment, and the students received emails as reminders to complete the survey. The purpose of the study was to explore the role of teaching presence and its relationship with the sense of community in an online course. The Cronbach Alpha was reported as .94 for the CCS and .97 for the TPS. Conclusions were drawn from a factor analysis and a multiple linear regression analysis. The factor analysis revealed that the construct of teaching presence has two identifiable factors, which were labeled (a) instructional design and organization and (b) "directed facilitation." The term "directed facilitation" represents an amalgamation of the two components of teaching presence referred to as "direct

instruction" and "facilitating discourse." The multiple linear regression analysis indicated that student recognition of effective directed facilitation, instructional design and organization, and student gender each played a role in predicting the students' overall sense of learning community (Shea et al., 2005).

Shea et al. (2006) drew the same conclusions in their study, which validated the TPS. In the validation process, the researchers were able to reach 1,067 students across 32 colleges, yielding a 47% response rate. Students were sent an email of prenotification informing them that they may be prompted to take a survey within the course management system. The prompt to take the survey in the course management system was randomly generated. The resulting multiple regression model concluded that 78% of the variability of the teaching presence construct was accounted for by (a) instructional design and organization and (b) directed facilitation. The students in the study reported a higher sense of community when the instructor reinforced student contributions, injected their own knowledge, and confirmed student understanding (Shea et al., 2006). The authors discussed possible reasons that only two factors loaded instead of the hypothesized three factors. These reasons included the need for better indicators of direct instruction in online courses and that direct instruction may not be necessary in an online course.

While Shea et al. (2005) and Shea et al. (2006) concluded that a two factor model fit their data, Arbaugh and Hwang (2006) concluded that the original three factor model fit their data. The data was drawn from 190 MBA students who completed the Teaching Presence Scale, representing a 57.6% response rate. The researchers used a confirmatory factor analysis to validate the original-three component model of teaching presence. Although the three components were found to be distinct, they nevertheless are highly correlated, which suggests

that teachers must be able to fulfill all three components: instructional design and organization, direct instruction, and facilitating discourse (Arbaugh & Hwang, 2006). The study helps in the development of a "conceptually grounded and empirically sound basis" (Arbaugh & Hwang, 2006, p. 16) for examining the distance learning process.

In an effort to further develop insight into the faculty development process meant to foster greater understanding of teaching presence, Shea, Pickett, & Pelz (2003) studied the data collected from online students enrolled in the SUNY learning network. Students completed the TPS, which was disseminated through email and course announcements. The data was drawn from 6,088 students with a 31% response rate. The analysis of the data demonstrated that when students reported high levels of any of the teaching presence components (effective instructional design and organization, effective direct instruction, or effective facilitating discourse), they also report high levels of satisfaction and learning. While students rated their classmates almost as high as their instructor on effective discourse facilitation, the correlations between scores for their classmates discourse facilitation and their satisfaction and reported learning were less so. This supports the conclusion that students can play a vital role in teaching presence, but they cannot replace the teacher. Shea et al. (2003) drew the conclusion that the best approach to ensure quality training and development of online learning teachers is to focus on the principles and research of Bransford et al. (1999), Chickering and Gamson (1987), Garrison et al. (1999) and Anderson et al. (2001).

Increasing Teaching Presence

While the research is overwhelmingly positive in valuing teaching presence in an online course, the research available on pedagogy and actions that increase teaching presence in an online course are contradictory and underdeveloped. In terms of discussion forums, a teacher can increase teaching presence by the clarity and specificity of the instructions (Swan, 2002a)

and the percent of the course grade based on discussion responses (Swan, 2002b). While Palloff and Pratt (1999) warn teachers to avoid too much participation, Picciano (2002) believes that active participation in the course helps teachers avoid the perception of being invisible. Mazzolini and Madison (2007) reminds teachers that they do not need to respond to every student, while Garrison and Cleveland-Innes (2005) suggest that teachers' role is to moderate and shape the discourse and to encourage students to participate in the discussion. Additionally, the teacher can increase teaching presence by increasing immediacy (Baker, 2004; Richmond et al., 1987) unless the culture of the students does not value immediacy (McCrosky, Sallinen, Fayer, Richmond & Barraclough, 1996). Furthermore, the clarity and consistency of the course design, the teacher contact, and the teacher feedback can all help to increase teaching presence in an online course (Swan, 2002a). As more and more research focuses on teaching presence in online course, the specific pedagogical decisions, theoretical basis, and organizational practices that increase teaching presence will become clearer.

Sense of Community

Similar to the research on teaching presence, the construct of community is overwhelmingly positive for online courses; however, the pedagogical decisions and organizational practices for increasing a student's sense of community are still unclear. The theoretical foundation for valuing the sense of community in a face-to-face course or an online course is drawn from the theory of social constructivism.

Historically, the teacher has been considered the center of all learning in a classroom; however, one theory of learning, social constructivism, considers learning to be social in nature. Social constructivists believe that students learn just as much from one another and from interacting with the environment as they learn from their teachers. Furthermore, Vygotsky (1978) purports that learners do not learn in isolation from others. Social constructivists,

including Vygotsky, believe that reality does not exist prior to its social invention and that knowledge is a human product that is socially and culturally constructed; therefore, the learner-learner interactions and the learner-environment interactions are deemed essential.

The social constructivist classroom places an emphasis on knowledge construction and collaboration rather than knowledge reproduction and independent learning (Vygotsky, 1978). Vygotsky (1978) believes that cognitive functions can be explained as products of social interactions and that learning is not simply the accumulation of new knowledge by learners; it is the process by which learners are integrated into a knowledge community. Therefore, the classroom activities are learner-centered and include group interactions as a means of learning. Finally, the instructor moves away from the role of the 'sage on the stage' to that of a facilitator of learning, a collaborator, and an active participant in the learning process. From a social constructivist perspective, a classroom should be viewed as a community of learners in which all members, teachers and students alike, should feel a sense of belonging as they work together to construct knowledge. One can begin to understand the importance of students feeling a strong sense of community when envisioning learning as a social process with individuals engaged in social activities, viewed through a social constructivist lens. This kind of teaching can nurture a sense of community (Rovai, 2005). Online teachers who believe in a social constructivist approach to learning must reconceptualize how a sense of community can be created when moving instruction from a face-to-face course to an online course where learners are separated geographically from each other and interact asynchronously with each other.

While there has been an abundance of research on the sense of community in traditional courses, few studies have focused on the sense of community in online courses (Liu et al., 2007; Ouzts, 2006; Shea et al., 2005; Rovai, 2002a). The emphasis of community in online courses

stems from three current trends: 1) theories of learning focused on interaction and collaboration of students, 2) technologies that provide occasions for communication and collaboration, and 3) courses founded on theories of learning and technology (Wallace, 2003). Historically, learner-learner and learner-instructor interactions have provided students with social, emotional, and academic support in traditional courses while developing community in traditional courses (Rovai, 2002a). As the popularity and demand for online courses continues to grow, it is important to understand how learner-learner and learner-instructor interactions take place in online courses, as well as, to understand the importance of community experienced by the students enrolled in online courses.

Higher education should move beyond simple access to information (Rovai, 2007) to pedagogy that assists students in constructing knowledge individually and with their peers. While engagement with class members and the formation of community are important in all higher education courses, it is even more vital in online courses, where attrition rates are higher (Picciano, 2002). Teachers need to understand the development of community in an online course to make course design and pedagogy decisions. Studies (Liu et al., 2007) have demonstrated that building communities in online courses is not as intuitive as advocates have suggested. In fact, researchers (Liu et al., 2007) have suggested that communities cannot develop on their own without careful planning, continued support, and intentional tasks and activities to develop communities.

Definitions of Community

The common elements of classroom community definitions include four dimensions: spirit, trust, interaction, and learning (Rovai, 2001). Spirit is the recognition of membership in a community and the feelings of friendship, cohesion and bonding that develops between the learners. Trust describes a willingness of students to rely on one another and the extent to which

the learners care about the other members of the community. Interaction includes the quantity and quality of students 'talking' to one another whether it is synchronous or asynchronous. Finally, the learning is the feeling that knowledge and meaning are being constructed within the course.

According to Rovai, a classroom community is a specific type of community with a bounded educational setting, a specific purpose for learning, and a finite period of time (Rovai, 2001). Learning communities include the teacher and the students, although the teacher has a responsibility for setting the climate of the class and nurturing the development of community within an online course (Mandernach, Gonzales & Garrett, 2006; Rovai, 2003).

Palloff and Pratt (1999) questioned how community can be fostered among learners who are physically separated from each other. Yet, when community is viewed as what people do together, rather than where or through the means in which they do them, community becomes separated from geography (Wellman, 1999) making it a reasonable goal in a traditional or online course. Findings from several research studies (Rovai, 2003; Wallace, 2003; Rovai, 2002a. 2002b; Lally & Barrett, 1999) suggest that community can be constructed and nurtured in an online course using a course management system. New internet-based technologies have changed the availability and the functionality of tools available for creating a community in online courses. These new technologies, commonly called web 2.0 technologies, provide ways for communities of learners to interact regardless of physical location (Wilson & Stacey, 2003).

Several factors impact the sense of community in online courses. These factors include the student-instructor ratio, the transactional distance, the social presence, the instructor immediacy, lurking, social equality, collaborative learning, group facilitation, self-directed learning, small

group activities, teaching styles and learning styles, and the number of students enrolled in the course (Rovai, 2002a).

Research on Community

Research on community in online courses has followed a similar timeline as research on teaching presence in online courses. Early research used qualitative methods or mixed methods until a valid and reliable quantitative instrument was designed. Liu et al. (2007) used a case study approach including data drawn from semi-structured interviews, a sixty-five item survey, and content analysis based on frequencies of online collaboration, communication, and social interaction strategies. The study focused on community in an online MBA program, with twenty-eight faculty members, twenty second-year students, and a total of twenty-seven courses.

The data revealed that the sense of community is positively related to teaching presence, learning engagement, feelings of having learned a substantive amount of new content, and overall satisfaction with quality of the online course. Liu et al. (2007) concluded that the findings indicate a need for "a systematic effort to build a sense of learning community, starting from perceptual changes from online instructors to providing substantial training support and best practices for community building to programmatic plans for three levels of community building" (p.22).

Similarly, the need for training was one conclusion of Skinner (2007), who used discussion board analysis to explore the interactions between students in an online course. The study pulled data from nine discussions across two classes, for a total of 618 messages. Messages were coded using the interaction analysis model, which codes messages as either lower levels of knowledge construction or higher-order learning. The data revealed that most students enjoyed a sense of learning together as they felt comfortable sharing their knowledge and their confusions within the learning community. The remaining students reported a lack of connection, trust, and even

fear. These students reported that they feared information from their peers was inaccurate and they feared they were being misinterpreted through the text-based, asynchronous discussions. The author (Skinner, 2007) believes the results demonstrate the importance of the teacher's role in designing discussions, which must include setting the purpose of the discussion and keeping courses goals in mind while being sensitive to student experiences. When communities of learners fail, the construction of knowledge in the community is weakened (Skinner, 2007).

Another study (Rovai, Wighting & Liu, 2005) that focused on the strength of community found that fully online students feel a weaker sense of community then do face-to-face students, which suggests that online students are more likely to dropout. In addition, non-traditional students feel more connected when compared to younger students. While differences existed in the subgroups for the construct of sense of community, no differences were found between online and face-to-face groups in terms of perceived learning. The findings are based on an analysis of 279 university students enrolled in undergraduate and graduate educational programs. The response rate for the survey was 83.3%. Of the 279 students, almost 90% were female. The students in the study completed the Classroom and School Community Inventory (CSCI) and a self-report of perceived learning (McCrosky et al., 1996). The authors concluded that several actions by administrators and faculty are needed to increase a student's sense of community. Some examples of these actions may include designing and conducting online courses based on a "culturally responsive form of social constructivism" (Rovai, Wighting & Liu, 2005, p.370); forming cohorts; focusing on interactions that occur between students, peers, and the teacher; and integrating students in student affairs activities.

Classroom Community Scale

The limitation of the current methodologies sparked the development of the Classroom Community Scale (CCS) by Rovai (2002a). The CCS was developed for educators to use and

has been designed to be teacher-friendly by keeping the survey short, making the scoring easy to complete, and making the interpretation simple. Rovai believes that if educators have access to an effective tool for measuring community in a learning environment, then they will be "better equipped to conduct research on how best to design and deliver instruction at a distance in order to promote community and, by implication, to promote satisfaction and persistence among students" (Rovai, 2002a, p.198).

The Classroom Community Scale was designed to measure the strength of community experienced by participants in an educational setting. The definition for sense of community draws on research by McMillan and Chavis, Sarason, and Unger and Wandesman (Rovai, 2002b), which is a "feeling that members have of belonging, a feeling that members matter to one another and to the group, that they have duties and obligations to each other and to the school, and that they possess shared expectations that members' educational needs will be met through their commitment to shared learning goals (Rovai, 2002b, p.322).

Since the development of the CCS, many researchers (Ouzts, 2006; Shea et al., 2005; Rovai, 2003, 2002a, 2002b) have employed the survey to study community in an online course. An interesting element to note is that on the CCS there is a significant difference between female scores and male scores (Rovai, 2002a); with females scores being greater than male scores. The learning style of the student (Rovai, 2003), the course content (Rovai, 2002a), and the length of the course (Shea et al., 2005) have been found not to affect the total CCS score.

For this study, the CCS provides the measure for the sense of community as the independent variable. Chapter 3 provides further information on the CCS, including details on the reliability and validity of the instrument and directions for scoring the instrument.

Research Employing the Classroom Community Scale

In the original study implementing the Classroom Community Scale, Rovai (2002) found that community has two factors. The first factor was named *connectedness*, which is "the feelings of the community of students regarding their connectedness, cohesion, spirit, trust, and interdependence" (Rovai, 2002a, p.206). The second factor was named *learning*, which represents "the feelings of community members regarding interaction with each other as they pursue the construction of understanding and the degree to which members share values and beliefs concerning the extent to which their educational goals and expectations are being satisfied" (Rovai, 2002a, p.206-207). Connectedness accounted for 42.8% of the variance for community, while learning accounted for 11.24% of the variance of community. The conclusions were drawn from a data set including 375 students enrolled in 28 courses, representing a response rate of 66%.

With the design of the CCS completed and tested for reliability and validity, Rovai (2002a) went on to study the relationship between sense of community and cognitive learning in an online educational environment. The study included 314 students, drawn from twenty-six graduate education and leadership courses with a 66% return rate. Students completed the CCS and a self-report of perceived cognitive learning developed by Richmond et al. (1987). Students had four weeks to complete the survey. Throughout the four weeks, they received emails with directions and encouragement to complete the survey. A multiple linear regression analysis was employed, using each sub scale of the CCS (learning and community) as the independent variables and perceived cognitive learning as the dependent variable. The results of the multiple regression concluded that 43% of the variance of perceived cognitive learning was accounted for by the two subscales of the CCS, suggesting a relationship between the sense of community and perceived cognitive learning. Rovai (2002b) concluded that 1) online graduate students can feel

connected, 2) students with strong sense of community report greater levels of learning, 3) female students feel a greater sense of community, and 4) ethnicity and course content do not affect the sense of community. In addition, classroom community is strong when learners:

> a) feel connected to each other and to the instructor, b) manifest the immediate communication behaviors that reduce social and psychological distance between people, c) share common interests and values, d) trust and help each other, and e) actively engage in two way communication, and f) pursue common learning objectives (Rovai, 2002b, p.322).

In another study, Ouzts (2006) disseminated the CCS to students in order to study the quality of online learning at a college. She surveyed forty-eight courses, including eleven graduate course and thirty-seven undergraduate courses. A total of 227 students completed the survey, which represented a 27.7% response rate. Of the students who completed the survey, 43.6% were graduate students and 55.9% were undergraduate students. A large percentage (88.1%) of the completed surveys were submitted by females; however, the percentage reflected the enrollment of the courses. The survey was disseminated by the director of the university outreach school to students through a course announcement appearing in the online learning environment. Additionally, reminders to complete the survey were sent via email. Students had access to complete the survey for one month. Students enrolled in multiple courses were asked to only complete the survey once and to only think about one course as they completed the survey. The reliability was tested using Cronbach Alpha, which yielded .93 for the entire survey. When students completed the survey, they were asked whether they wanted to participate in a follow-up interview.

In order to choose the participants for the follow-up interviews, students were divided into three categories: high, medium, and low sense of community. Students who received scores more than one standard deviation above the mean were considered to have a high sense of community, while students who had scores more than one standard deviation below the mean

were categorized as having low sense of community. The study determined that 15% of the students felt a high sense of community, 10% of the students felt a low sense of community, and the remaining 75% of the students felt a medium sense of community.

The follow-up interviews painted two completely different pictures of online courses. The students categorized as low sense of community reported: poor teacher characteristics, low student to student connection, individual assignments, poor quality of learning, and overall dissatisfaction with the course. Additionally, the students did not receive feedback on assignments, did not understand the expectations, did not feel connected with the instructor, and did not like the class. Furthermore, the students reported that the teacher was disengaged or simply unavailable. While students cited many negative aspects to the class, the students nonetheless reported that they had learned from the course.

The students who received high sense of community scores painted the opposite image of online learning. Five themes emerged from the interviews: good teacher characteristics, strong student connection related to assignments, a change in personal perspective, quality learning, and satisfaction. The teacher was described as a positive force in the class, interactive, present, open, honest, and human. Furthermore, the teacher was said to have guided instruction and spent time with the class. Students interacted with other students and with the instructor through discussion and group work.

Ouzts (2006) concluded that online courses which combine new web 2.0 technologies and social constructivist learning activities can facilitate the feeling of connectedness and can put to rest concerns about quality learning experiences. Moreover, students' sense of community is related to increased satisfaction in online learning.

Another study employing the CCS was completed by Dawson (2006), who set out to study the sense of community within undergraduate and graduate online course in Australia. The CCS was implemented in three phases. The first phase provided a chance to see how students would react to the wording of the survey; certain educational terms are used differently in the United States and Australian educational systems. The second step was a pilot study of 160 students. The final phase included 464 students from 25 courses, with a mix of students enrolled in both undergraduate and graduate courses. The CCS was disseminated through the course announcement section of the online learning environment. Additionally, email was used for reminders to complete the survey. The response rate for the CCS was 23%, with a large majority (84%) of the students being female. In addition to the CCS, data for communication frequencies was tracked through the online learning environment. Dawson (2006) suggests that students who communicate more with their peers and teachers feel a higher degree of community.

The importance of the role of the teacher on the student's sense of community is further confirmed by Shea et al. (2005) and Shea et al. (2006). Both studies employed an online survey consisting of the CCS, the Teaching Presence Scale (TPS) and some demographic variables. Conclusions were made from a factor analysis and a multiple linear regression analysis. The multiple linear regression analysis revealed that 62% of the total variance of learning community could be accounted for by the teaching presence factors. The results of both studies suggest that a relationship exists between teaching presence and the sense of community. Additionally, the studies concluded that demographic factors of length of course, age, employment status, reason for taking an online course, physical distance from campus and previous online experience did not make a significant difference on the sense of community score.

Another study (Rovai & Wighting, 2005) contributed to the body of literature on community by investigating the relationship between the feelings of alienation and the feelings of community using the Dean Alienation Survey and the CCS. The survey included 117 students representing a 93% return rate. The canonical correlation provided evidence that an inverse relationship exists between the feeling of alienation and the feeling of community. Rovai and Wighting (2005) concluded that "alienation with society can exert a dampening effect on sense of community within virtual environment and can possibly lead to low student achievement and student attrition" (p.107).

Lastly, Rovai and Ponton (2005) set out to explore the relationship between classroom community and student learning using five variables. Classroom community was made up of the subscales for the CCS and the mean number of student postings per week, while student learning was based on the student's total points and the student's perception of learning measured by Richmond et al.'s (1987) perceived learning question. The classroom community variables were found to be related to the student learning variables, which provides empirical evidence that the sense of community and student learning are highly related in online learning (Rovai & Ponton, 2005). Further, the scores of African-Americans were significantly lower on all scales compared to caucasians, demonstrating that an achievement gap is present in online, asynchronous courses.

Benefits of Community

The benefit of students' feeling a strong sense of community has been proven through research. First, a sense of community has the ability to attract and retain online learners (Rovai, 2002a, 2002b). Next, there are positive correlation between the sense of community and perceived learning (Liu et al., 2007; Rovai, 2002b), course satisfaction (Liu et al., 2007; Ouzts, 2006), quality of learning (Ouzts, 2006), and good teaching (Ouzts, 2006). Students benefit from community by experiencing a greater sense of well being and by accessing a larger circle of

peers that are available for assistance (Rovai, 2001). Furthermore, research suggests that when the feeling of community is strong, the flow of information increases (Rovai, 2001) and the student's persistence increases (Tinto, 1993).

The sense of community has been inversely correlated with the feeling of alienation (Rovai & Wighting, 2005), and the feeling of isolation (Rovai, 2002b), and the feeling of burnout (Rovai, 2002b). Most importantly, drop-out rates are inversely related to the sense of community (Rovai, 2002b). Administrators and teachers in higher education institutions have expressed interest in promoting all the elements of education that are correlated with community and decreasing all the elements of education that are inversely correlated with community.

In addition to the correlation with teaching presence (Shea et al., 2006; Shea et al., 2005, Ouzts, 2006) the sense of community has been found to have a significant relationship with perceived cognitive learning with two studies (Rovai & Ponton, 2005; Rovai, 2002b).

Perceived Student Learning

For the current study, students provide a self-report of their learning which is based on the response for one question developed by Richmond, Gorham and McCroskey (1987). The perceived learning question has been used alone (Rovai, 2002b) and as a series of questions (Rovai & Barnum, 2003) in order to measure a students' perception of learning. Richmond et al. (1987) created the self-reported questions for perceived learning by asking students to answer two questions.

> 1) On a scale of 0-9, how much did you learn in the class, with 0 meaning you learned nothing and 9 meaning you learned more than in any other class you've had?; and
> 2) How much do you think you could have learned in the class had you had the ideal instructor? (Richmond et al., 1987)

By subtracting the score of the first question from the second question, the authors created a new variable called "learning loss." The learning loss variable was intended to remove any

bias that might exist for students that were forced to take the class or if the student disliked the course content (Richmond et al., 1987). Richmond et al. (1987) reported almost identical scores for the "learning loss" variable and the first question used alone. Several studies have employed the perceived learning question without the learning loss variable because of the similarity of the scores. Chapter 3 provides further information on the perceived student learning item, including the reliability and validity of the item as well as directions for scoring the item.

Following the initial study, McCroskey, Sallinen, Fayer, Richmond and Barraclough (1996), deployed a questionnaire including the perceived student learning question and other questions regarding immediacy. The questionnaire was distributed to undergraduate students in Australia, Finland, Puerto Rico and the United States. The study provided evidence that different cultures have different needs and expectations of immediacy. In one country, the immediacy variable predicted forty-six percent of the variance of perceived student learning, while in another country the immediacy variable only predicted twenty-five percent of the variance of perceived student learning. While the difference is rather large, the direction of the relationship is identical. This identical and positive relationship is the key to understanding the practical implications of the study. While there are differences between cultures and countries, the study concluded that the teachers' immediacy is a factor in the student's perceived learning from the course.

Baker (2004) expanded the immediacy and perceived cognitive learning research by examining the instructor verbal immediacy, affective learning, and cognitive learning in an online course. The studied included 145 online students and deployed an online survey comprised of the Gorham verbal immediacy scale, the McCroskey et al. affective learning scale, and the Richmond et al. (1987) cognitive learning scale. Baker found a moderate correlation

between immediacy and perceived learning. Students who rated their instructor as more verbally immediate expressed higher levels of learning.

In another study, Rovai (2002) used the perceived learning question to assess perceived learning in an online course and the Classroom Community Scale to measure the sense of community. The results of this study suggest no significant difference by gender on the perceived student learning item, although women reported slightly higher levels of perceived cognitive learning. In addition, Rovai (2002) reported no significant difference across ethnicity for perceived cognitive learning. Furthermore, the study concluded that students with a stronger sense of community tend to report a greater level of perceived cognitive learning.

Rovai and Barnum (2003) employed a survey including the perceived learning question, the learning loss measure, and a third question to measure perceived learning: "On a scale of 0-9, with 0 meaning you learned nothing and 9 meaning you learned more than in any other course you've had, how much do you think you could have learned in this course if it had been a traditional face-to-face course that met regularly in a classroom?" The questions were posed to 528 graduate students enrolled in 19 online graduate courses. A total of 328 students completed the online survey, for a response rate of 62.24%. In addition to the perceived cognitive learning questions, the researchers reviewed two measures of interactivity: active interaction and passive interactions. Active interactions represent the number of postings, while passive interactions represent the number of individual instances of access to the course discussion forums. The data from the research provided evidence of significant differences in perceived cognitive learning across online courses, suggesting a need for quality assurance in distance education courses. In addition, the researchers found that students' perceived learning in an online course was positively related to quantitative measures of course interactions leading them to conclude that a

self-reported measure is a valuable and accurate tool for research. Through this study, Rovai (2003) expanded the perceived cognitive learning questions from two to three, while expanding the research agenda to compare a student's perspective of his or her learning online with a student's perspective of his or her learning in a traditional, face-to-face course.

Conclusion

Learning is a fundamental part of higher education, which makes the outcome of learning an important consideration for research studies. For the current study, the belief is that the perception of learning is more important than a final course grade and that college students have a good sense of what they have learned from a course (McCroskey et al., 1996; Richmond et al., 1987).

Teaching presence and the sense of community have been studied separately (Liu et al, 2007; Dawson, 2006; Ouzts, 2006; Rovai, 2003, 2002; Swan, 2001) and together (Shea et al., 2006; Shea et al., 2005). Both teaching presence and the sense of community have independently been found to be important aspects of the success of students in online courses (Liu et al., 2007; Ouzts, 2006; Shin, 2003; Picciano, 2002; Rovai, 2002a; Swan, 2001). Several studies (Shea et al., 2006; Shea et al., 2005) have suggested a relationship between teaching presence and the sense of community, noting a significant link between the students' sense of learning community with their recognition of effective instructional design and directed facilitation on the part of their course instructors. In addition, research in the area of online learning suggests a positive relationship between the sense of community and perceived student learning (Rovai & Ponton, 2005; Rovai, 2002b).

The constructs of teaching presence and the sense of community are important aspects to consider when examining the complexities associated with the learning environment, practices of the teacher, and the interactions that occur within an online course. The current literature is

deficient of studies that review teaching presence and the sense of community simultaneously while focusing on student learning. The research presented on teaching presence implies that teachers must be cognizant of how they organize the course, present curriculum to the students, and present themselves so that students feel their presence within an asynchronous course. The research on the sense of community implies that students can feel a sense of community in an asynchronous course. These feelings can increase the flow of information and a student's persistence in completing the course. Students are able to feel the presence of the teacher and the presence of a community, even when separated geographically from their teacher and their peers. Hence, an examination of the vital connection between the teaching presence and the sense of community with the students' perception of learning is greatly needed.

Table 2-1. Teaching presence and the sense of community

	Teaching Presence	Sense of Community
7 principles of Good Practice in Undergraduate Education	✓	✓
Encourage student-faculty contact	✓	✓
Encourage cooperation among students	✓	✓
Encourage active learning	✓	✓
Give prompt feedback	✓	
Emphasize time on task	✓	
Communicate high standards	✓	
Respect diverse talents and ways of learning	✓	
Theory of Transactional Distance	✓	✓
Learner-Content Interactions	✓	
Learner-Instructor Interactions	✓	
Learner-Learner Interactions		✓
How People Learn	✓	✓
Learner-Centered Environment	✓	✓
Knowledge-Centered Environment	✓	
Assessment-Centered Environment	✓	
Community-Centered Environment	✓	✓

CHAPTER 3
METHODOLOGY

Introduction

This study explored how the constructs of teaching presence and the sense of community act as predictors of perceived student learning in an online course. To accomplish this, a descriptive study using quantitative methods was conducted utilizing a multiple linear regression model, correlation coefficients, t-tests, and ANOVAs to analyze the data collected from an online survey comprised of six parts with a total of 51 items (Table 3-1).

Multiple linear regression analysis is a statistical method for studying the relationship between a dependent variable and two or more independent variables (Shavelson, 1998). In this study, the multiple linear regression analysis determined whether teaching presence and the sense of community act as predictors of perceived student learning in an online course. Correlation coefficients described the strength of relationship between two variables. In this study, the three correlation coefficients generated were (1) the correlation between teaching presence (IV) and the sense of community (IV), (2) the correlation between perceived student learning (DV) and the sense of community (IV), and (3) the correlation between perceived student learning (DV) and teaching presence (IV). Additionally, several T-tests and ANOVAs were conducted to determine if group differences are prevalent in the value for perceived student learning.

This chapter describes the design of the study including the population, sample size and sampling procedures. Further, a description of each instrument utilized in the study will provide details of the instrument's validity and reliability. Finally, the data collection process and the data analysis process will be explained.

Population and Sample

The study was conducted within the College of Education at the University of Florida. The College of Education began to offer online degree programs in 2004. On average, 27 students enroll in each online course. The length of each course is either 8 weeks or 16 weeks. In the fall semester of 2008, online courses were offered in the following departments: Educational Administration and Policy, Special Education, and the School of Teaching and Learning. Within the School of Teaching and Learning, two different online Curriculum & Instruction degrees were offered. These degrees are in the program areas of Educational Technology and Teacher Leadership for School Improvement.

This research study used a non-random convenience sample. At the beginning of each online course, students have four days to add or drop the course. All students enrolled in online courses after the add/drop period in the College of Education for the 2008 fall semester were emailed an announcement about the option to participate in the study by completing a survey. Additionally, students saw the identical invitation to participate when they log into the online course management portal. The announcement and email were sent by a member of the distance education department. During the 2008 fall semester, 612 unique students were enrolled in online courses after the add/drop period.

Minimum Sample Size

The minimum sample size is important when conducting multiple linear regression analysis, although researchers disagree on the process of determining the minimum sample size. Stevens (1996) suggests a minimum of 15 subjects per predictor. Tabachnich and Fidell (2007) provide a formula of $N > 50 + (8 \times$ the number of predictors). Shavelson (1998) states that the minimum sample size for an adequate estimate of the regression coefficient is 50 cases; however, the sample size should be at least ten times the number of subjects as independent variables. In

the current study, there are two predictor variables (teaching presence and the sense of community), so the minimum sample size would either need to be 30 subjects based on Stevens (1996), 66 subjects based on Tabachnich and Fidell (2007) or 50 subjects based on Shavelson (1998). This study had 115 subjects so all minimum sample sizes were met.

Instrumentation

In order to collect data pertaining to perceived student learning (the dependent variable), teaching presence and sense of community (the two independent variables) and the characteristics of the learner and course, an online survey (Appendix A) was distributed to online students enrolled in the College of Education at the University of Florida. The survey consisted of fifty-one items divided into six distinct parts. Each part was designed to appear as a new page in the survey.

The survey questions pertaining to teaching presence and the sense of community (independent variables) and the perceived student learning (dependent variable) were drawn from instruments developed and implemented in previous research studies. The following sections will describe each instrument, focusing on the validity and reliability of these instruments as determined in previous studies.

Perceived student learning

The score for the dependent variable of perceived student learning was drawn from one question. The perceived learning question seeks to understand the level of learning the student gained from the course by asking: "On a scale of 0-9, how much did you learn in this course, with 0 meaning you learned nothing and 9 meaning you learned more than in any other course you've had?" (Richmond, Gorham, & McCroskey, 1987). This question engages the student in a self-report of their level of learning from the course.

The question was first developed when the researchers Richmond et al. (1987) searched for a method to measure perceived cognitive learning and found that many of the methods employed in other research studies did not suit their needs. First, Richmond et al. (1987) determined that content area tests could not be used when research studies included subjects from multiple disciplines. McCroskey, Sallinen, Fayer, Richmond, and Barraclough (1996) agreed and noted that when academic tests are created by one person, the tests lack a keen focus on validity and reliability. Next, final grades could not be used as an indication of perceived cognitive learning because grades are subject to a variety of influences (attendance, participation, etc.) not related to cognitive learning. Additionally, final grades are typically not an option for consideration because they tend to have restricted ranges and it is difficult to separate the knowledge the student brought to the class from the knowledge the student gained during the class (Rovai & Barnum, 2003; McCroskey et al., 1996). With these issues in mind, researchers (McCroskey et al., 1996; Richmond et al., 1987) have concluded that college students have a good sense of what they have learned from a course and can accurately complete a self-report and thus, self-reported scores have emerged as an accepted practice (Rovai & Barnum, 2003). Ultimately, the perception of learning may be more important than reality, as decisions about learning are often based on perceptions (Rovai & Barnum, 2003).

In the original study (Richmond et al., 1987), the perceived cognitive learning question was developed to determine "learning loss" in a traditional undergraduate course. In order to determine "learning loss", the authors used two questions:

> 1) On a scale of 0-9, how much did you learn in the class, with 0 meaning you learned nothing and 9 meaning you learned more than in any other class you've had?; and
> 2) How much do you think you could have learned in the class had you had the ideal instructor? (Richmond et al., 1987)

By subtracting the score of the first question from the second question, the authors created a new variable called "learning loss." The "learning loss" variable was intended to remove any bias from the first question. The authors were concerned that a bias would be created if the student was required to take the class or if the student disliked the course (Richmond et al., 1987). This bias may be more of an issue when looking at undergraduate students with less flexibility to choose courses because of required courses than graduate students, who occasionally have the flexibility to craft their course of study. Richmond et al. (1987) found that the procedure yielded almost identical scores to those of the first question used alone, with a correlation of .94.

Similarly, other researchers have followed the same methods for determining perceived cognitive learning in traditional courses. In McCrosky et al. (1996), the researchers employed a pilot test including 162 students. The researchers reported a test-retest reliability score of .85 over a five-day period, thus substantiating the use of the perceived learning question as an instrument with high reliability. A test-retest is an appropriate test of reliability when an instrument has only one item.

With the recognition that each question in the original study (Richmond et al., 1987) yields it own measure of perceived cognitive learning with high reliability and validity, students in the current study will only answer the first perceived learning question (not the learning loss measure) followed by the Classroom Community Scale and the Teaching Presence Scale.

The Classroom Community Scale (CCS)

In 2002, Rovai (2002a) developed and field-tested a tool designed to measure the sense of classroom community a student feels within a postsecondary online course. The tool, a survey consisting of twenty items, was named the Classroom Community Scale (CCS). The survey was developed with the intention of furthering research in the area of designing and delivering online

instruction to promote community which appears to increase course satisfaction, student persistence, and student learning (Ouzts, 2006; Waltonen-Moore, 2006; Shea, Li, Swan & Pickett, 2005; Rovai, 2002b).

The items in the CCS were drawn from a review of literature suggesting that the characteristics of community include the following: feelings of connectedness, cohesion, spirit, trust, and interdependence among members (Rovai, 2002a). The development of the survey began with 40 questions, which were analyzed by three experts to determine content validity. Additionally, a factor analysis was conducted on the 40 questions to assist in the removal of extraneous questions. The final survey consists of 20 questions, which were all rated as totally relevant by the three experts. The procedure used to develop the CCS provides the foundation for high content and construct validity.

Following the completion of the CCS, Rovai's initial research included 375 graduate students enrolled in 28 different online courses. The CCS survey was available for students to complete at the end of the course. Rovai's initial research study suggests the instrument possesses excellent reliability for measuring classroom community for higher education students in online courses. The Cronbach coefficient alpha and the equal-length split-half coefficient corrected by the Spearman-Brown prophecy formula provided two internal consistency estimates for reliability with scores of .93 and .91 respectively.

In addition to the test of reliability, Rovai completed a factor analysis which produced three factors with eigen values over 1.0. These factors were rotated using the direct oblimin method to allow for correlations between factors. This method resulted in two factors, labeled *learning* and *connectedness*. The connectedness factor accounted for 42.81% of the variance for community, while the learning factor accounted for 11.24% of the variance for community

(Rovai, 2002a). The final CCS consists of 10 items measuring connectedness and 10 items measuring learning.

In 2006, Ouzts employed the CCS as a means of addressing concerns regarding poor quality, lack of student success, and student satisfaction in online courses. The results of the study were drawn from 11 graduate and 37 undergraduate courses. While 820 students were given the survey, only 227 students responded (27.7% response rate). The Cronbach's alpha for the overall score of classroom community was .93, indicating excellent reliability.

Ouzts (2006) divided the participants into three categories: low, mid and high scores. High scores were students with total scores of more than one standard deviation above the mean and low scores were students with total scores of more than one standard deviation below the mean. The students with scores that fell between high and low scores were considered mid-scores. This categorization of scores provided a framework from which to choose participants for the follow-up interviews. The interviews were used to confirm the validity of the Classroom Community Scale.

Shea, Li, Swan, and Pickett (2005) used the Classroom Community Scale as one of their instruments to determine how instructor behaviors contributed to the development of community in online courses. The sample consisted of 2,036 students drawn from 470 instructors. The reliability of the CCS was excellent, with a Cronbach's alpha score of .94 for the entire survey.

These results were replicated by Shea, Li & Pickett (2006) with a sample of 1,067 students enrolled in online courses at 32 colleges participating in the State University of New York Learning Network. The reliability of the CCS was excellent, with a Cronbach's alpha score of .93 for the entire survey.

Based on the reported research (Ouzts, 2006; Shea et al., 2006; Shea et al., 2005; Rovai, 2001), the Classroom Community Scale is a reliable and valid survey created for the purpose of quantifying the sense of community in an online course. Validity is assured through the process of the development of the instrument, which included a review of the literature and a review of the items by experts. The reliability is assured by Cronbach alpha scores. Additionally, the factor analysis demonstrates that there are two distinct factors embedded in the CCS. For this study, the overall score for the Classroom Community Scale will be utilized to describe the independent variable of sense of community.

Teaching Presence Scale (TPS)

The third part of the survey, the Teaching Presence Scale, is based on one element of the Community of Inquiry framework (Garrison, Anderson & Archer, 1999). In 2005, Shea, Li, Swan, and Pickett published the Teaching Presence Scale which was developed in consultation with Anderson, one of the original authors of the Community of Inquiry model, thus providing the basis for construct validity. The survey is based on the construct of teaching presence, which has been conceptualized to have three components: instructional design and organization, direct instruction, and facilitating discourse.

The Teaching Presence Scale (TPS) is a seventeen-question survey using a five-point Likert scale, which ranges from strongly disagree to strongly agree. The survey consists of six questions measuring instructional design and organization, six questions measuring facilitation of discourse and five questions measuring direct instruction.

Shea et al. (2005) utilized the TPS with a sample size of 2,036 students. The data from the study was derived from a response rate of 93%. A factor analysis was performed using a direct oblique rotation to determine the number of factors in teaching presence. After a scree-plot, the Kaiser-Gutman rule, and the interpretability of the solution, it was clear that only two factors, (a)

directed facilitation and (b) instructional design and organization, could be interpreted (Shea et al., 2005). Directed facilitation in name and concept is simply an amalgamation of direct instruction and facilitating discourse. The researchers concluded that the two factors were highly interpretable- all questions loaded high on one factor and low on the other factor. The two factors account for 74.37% of the variability of teaching presence. The reliability of the TPS was excellent, with a Cronbach's alpha score of.97 for the entire survey.

Shea, Li and Pickett (2006) replicated the study by Shea et al. (2005) with 1067 participants (12% blended course students, 88% online course students). In this study, the same two factors, (a) instructional design and organization and (b) directed facilitation, were extracted. The two factors account for 78.18% of the variance of teaching presence. The reliability of the TPS was excellent, with a Cronbach's alpha score of .98 for the entire survey.

In 2005, Arbaugh and Hwang set out to test the three-indicator model of teaching presence as originally described by Shea et al. (2005) to determine if the three indicators were distinctly separate. The sample included 190 MBA students drawn from fourteen courses. The response rate for the survey was 57.6%. The authors used a confirmatory factor analysis as a method of testing the theory. Arbaugh and Hwang (2005) were able to validate all three indicators. All three of the indicators were highly correlated, suggesting that online learning is demanding on instructors because they need to fulfill all three dimensions of teaching presence well (Arbaugh & Hwang, 2006).

The different conclusions of the two-factor model and the three-factor model, are important for the discussion of the results; however, the difference between the two models will not affect the analysis because overall scores, rather than subscale scores were used. The development of the TPS and the resulting studies provide a "conceptually grounded and

empirically sound basis for examining distance learning processes" (Arbaugh & Hwang, 2006, p. 16). Based on the reported research, the TPS is a reliable and valid survey created for the purpose of quantifying teaching presence in an online course. The validity is assured because one of the original authors of the COI model was consulted during the development of the TPS. The reliability is assured through the reporting of Cronbach alpha scores of .97(Shea et al. 2005), and .98 (Shea et al, 2006). For this study, the overall score for Teaching Presence Scale will be utilized to describe the independent variable of teaching presence.

Characteristics of the Student and Course

The last part of the survey includes thirteen items seeking information about the characteristics of the student and of the course, followed by two open-ended questions. The completion of these thirteen items is optional. The student characteristic items seek to gain information about the student's age, proximity to the campus, current course enrollment, enrollment in a cohort, gender, preferred learning style, strongest multiple intelligence (Gardner, 1983) and enrollment in a degree program. In addition, while most students successfully complete the course for which they are registered, there are times when an issue occurs and a student must take an incomplete. In order to gather this data, one item asks the student if he or she is on track to successfully complete the course. The course characteristic item seeks to gain insight on the length of the course. These eleven items provide data regarding student and course characteristics to determine if there are group differences in perceived student learning. The last two questions provide a space for students to elaborate on their experience with teaching presence and the sense of community in any of their online learning experiences.

Data Collection Process

The survey for this study was created online using Survey Monkey (http://www.surveymonkey.com). An online survey provides an effective and efficient method

for reaching participants in an online course because of their geographic distance to the campus (Wright, 2005). In order to distribute the invitation to participate in the survey to all online students enrolled in the College of Education at the University of Florida, an announcement was posted by the distance education department for the College of Education on the online course management portal, which automatically sends an email to all enrolled online students with the same text as the announcement. The announcement included a short description of the survey and a hyperlinked URL to the online survey. The announcement was available for a four-week period toward the end of the course. Although other distribution methods were considered (Table 3-2), the general system announcement distribution method was chosen in consultation with the leadership in the College of Education due to its ease of distribution, consideration for FERPA-related issues, and limiting the interference to students and instructors. The benefits of using a general system announcement are uniform distribution, distribution by a trusted authority (Sheehan, 2001), and assurance that students would see the invitation.

Data Analysis

Organizing the Data

Survey data was entered into SPSS v.15. The values for perceived learning, sense of community, and teaching presence were entered using the overall scores for each instrument. Student and course characteristics were coded using categorical numbers (Table 3-3).

The perceived learning score ranges from zero to nine, with higher scores indicating that the student reported higher levels of learning from the course. The sense of community raw scores range from zero to 80, with higher scores indicating a stronger sense of community. Half of the items (1, 2, 3, 6, 7, 11, 13, 15, 16, and 19) are positively worded so those items are weighted as follows: Strongly Agree = 4, Agree = 3, Neutral = 2, Disagree = 1, Strongly Disagree = 0. The remaining items (4, 5, 8, 9, 10, 12, 14, 17, 18, and 20) are negatively worded,

so those scores are weighted as follows: Strongly Agree = 0, Agree = 1, Neutral = 2, Disagree = 3, Strongly Disagree = 4. The overall score for sense of community is the sum of all the responses (Rovai, 2002a). The teaching presence raw scores range from zero to 68, with higher scores indicating a greater teaching presence. All of the questions are positively worded and weighted as follows: Strongly Agree = 4, Agree = 3, Neutral = 2, Disagree = 1, Strongly Disagree = 0. The overall score for teaching presence is the sum of all the responses.

While the Classroom Community Scale and Teaching Presence Scale are comprised of subscales, the researcher elected to use overall scores because the historical research is contradictory as to whether the subscales are distinctly different or overlapping concepts.

Data Analysis by Question

Question 1: How do teaching presence and the sense of community function as predictors for perceived student learning in an online course?

Ho: The proportion of variance of perceived student learning (DV) that is predicted by sense of community (IV) and teaching presence (IV) is zero.

A multiple linear regression analysis generates an R^2 value which is an index of the proportion of variance for perceived student learning predicted by sense of community and teaching presence. The design requirements for multiple linear regression analysis include the following: one dependent variable and two or more independent variables with all variables being continuous. The design requirements are met in this study.

The four assumptions of multiple linear regression analysis are linearity, normality, homoscedasticity, and independence (Shavelson, 1998). Linearity, normality and homoscedasticity were checked using a scatterplot of residuals against predicted scores (Shavelson, 1998). The scatterplots showed points equally above and below the line (normality), in the general shape of a line (linearity), and equally distributed across levels (homoscedasticity).

In order to address the last assumption, independence, efforts were made to ensure online students submit only one survey. If a student is enrolled in multiple courses during the term, it is requested that he or she only complete the survey once. A note on each page of the online survey states "NOTE: If you are enrolled in more than one online course, please select one of the courses to think about when responding to the survey items."

The use of scatterplots provides a visual representation of the data to review for possible outliers. When outliers were determined, the researcher double-checked the data entry into SPSS for errors. Data will be considered to be an outlier if the standardized residual is more than 3.3 or less than -3.3. Outliers were removed from the data set only if they have been determined to have undue influence on the model based on Cook's distance (Pallent, 2007). Hence, if Cook's distance is greater than 1, the data set will be removed from the study (Tabachnick & Fidell, 2007) because multiple linear regression analysis is very sensitive to outliers (Pallent, 2007). Overall, no data was removed from the data set due to being an outlier.

The multiple linear regression model, $Y_i=\beta_o+\beta_i X_{1i}+ \beta_i X_{2i} +e_1$, consists of a slope intercept (β_o), an error term (e_1), and two regression coefficients ($\beta_i X_{1i}$ and $\beta_i X_{2i}$). The regression coefficient for sense of community ($\beta_i X_{1i}$) explains how a unit increase in sense of community will affect perceived learning, while the regression coefficient for teaching presence ($\beta_i X_{2i}$) explains how a unit increase in teaching presence will affect perceived learning. In a multiple regression model, the regression coefficients are determined after controlling for the other independent variable, meaning that the regression coefficients are the relationship between Y and X_1 for individuals with the same score for X_2 (Shavelson, 1998). Therefore, if a relationship exists between teaching presence and the sense of community, it will not affect the

results of the multiple linear regression model (Shavelson, 1998). The standardized beta was used in this study because each survey has a unique scale.

While determining the multiple linear regression equation, it is possible to estimate the magnitude of the relationship between the dependent variable and the best linear combination of the independent variables, otherwise called the multiple correlation coefficient (R). The square of the multiple correlation coefficient (R^2) describes the percent of variability that is accounted for by the independent variables in the model (Shavelson, 1998). When the sample is small, the adjusted multiple correlation coefficient should be used in place of the multiple correlation coefficient (R^2) because the former provides a better estimate of the true population value (Pallent, 2007). For this study, the adjusted R^2 will be reported.

The final step for multiple linear regression analysis is a test of statistical significance. The test of statistical significance will ensure that the square of the multiple correlation coefficient was caused by a systematic relationship between the dependent and independent variables. The $F_{observed}$ was compared to $F_{critical(.05,\ k,\ (N-k-1))}$ to determine if the observed relationship occurred by chance or whether the relationship occurred as a result of a systematic relationship between the dependent variable and the independent variables.

Sub Question A: What is the strength of relationship between teaching presence (IV) and the sense of community (IV)?

Ho: The relationship between teaching presence and the sense of community is zero.

In order to determine the strength of relationship between teaching presence and the sense of community, a correlation coefficient was calculated. A correlation coefficient is the linear relationship between two variables (Galloway, 2004). The resulting coefficient is always a number between -1 and +1. A number closer to +1 indicates the two variables have a positive relationship, meaning the two variables move in the same direction (as teaching presence

increases, the sense of community increases). A number closer to -1 indicates the variables have a negative relationship, meaning the two variables move in opposite directions (as teaching presence increases, the sense of community decreases). A value close to zero suggests that a relationship does not exist.

Multicollinearity, which is a high correlation between the independent variables, was checked because it produces unstable estimates of the partial regression coefficients (Shavelson, 1998). Predictor variables should account for different proportions of the variance of the dependent variable (perceived student learning) because the variance in the dependent variable can only be accounted for by one independent variable (Hinkle, Wiersma & Jurs, 1994). If the Product Pearson correlation coefficient for the two independent variables is close to 1, then the tolerance will be reviewed. If the tolerance is determined to be less than .20 then multicollinearity is an issue.

Sub Question B: What is the strength of relationship between teaching presence (IV) and perceived student learning (DV)?

Ho: The relationship between teaching presence and perceived student learning is zero.

In order to determine the strength of relationship between teaching presence and perceived student learning a correlation coefficient was calculated. For multiple linear regression analysis perceived learning (dependent variable) and teaching presence (independent variable), as well as, perceived learning (dependent variable) and sense of community (independent variable) should exhibit a correlation higher than plus or minus .3. The variables must have some correlation to warrant the use of the variables in the multiple linear regression analysis. In order to determine the correlation coefficient, the scores for teaching presence and perceived student learning were entered into SPSS and a correlation matrix was generated.

Sub Question C: What is the strength of relationship between the sense of community (IV) and perceived student learning (DV)?

Ho: The relationship between the sense of community and perceived student learning is zero.

In order to determine the strength of relationship between sense of community and perceived student learning, a correlation coefficient was calculated using the same methods as described in Sub Question B. In addition to answering the research questions, a series of t-tests and ANOVAs was completed in order to determine if the student or course characteristics create statistically significant group differences in the dependent variable. In order to determine if group differences exist, the course and student characteristic items were coded using categorical numbers. An independent samples T-test is the appropriate statistical method for comparing the mean scores of two different groups of subjects to determine if the differences of the mean scores are statistically significant (Shavelson, 1998). For this study, six T-tests were performed to determine if there are significant group differences ($p < .05$) in the perceived student learning variable. When an item has more than two groups, then an ANOVA needs to be employed. For this study five ANOVAs were performed. When group differences appeared in the ANOVA results then Post Hoc (Tukey) tests were utilized to determine which groups were statistically significant.

In addition to this reporting of group differences, an effect size will be calculated and reported for all student and course characteristics that have a significant difference. The effect size statistic provides an indication of the magnitude of the differences between the groups. The effect size was calculated using Eta squared. Eta squared ranges from 0-1 and explains the proportion of the variance in the independent variables explained by the group variable. This

study used the effect size guidelines proposed by Cohen (1988), which are .01= small effect, .06= moderate effect, and .14= large effect.

Table 3-1. Instrument descriptions and authors

Description	Number of Questions	Directions	Author
Part 1: Informed Consent	1 question	Must agree to the informed consent to enter survey	
Part 2: Perceived Learning	1 question	Must answer to proceed	Richmond, Gorham & McCroskey, 1987
Part 3: Classroom Community Scale	20 questions	Must answer all questions to proceed	Rovai, 2002a
Part 4: Teaching Presence Survey	17 questions	Must answer all questions to proceed	Shea, 2005
Part 5: Characteristics of Learner and Course	11 questions	Optional	Researcher generated
Part 6: Optional open-ended questions	2 questions	Optional	Researcher generated

Table 3-2. Distribution methods considered

Methods	Pros	Cons
Email by researcher		Spam issues with mass email, FERPA issues for getting email lists, accuracy of email list
Teachers adding a link to course	Highly visible to students	Hard to contact all teachers, Difficult assuring that each survey announcement looks identical
General announcement	Reliable Source, students will see as an announcement and as an email, No FERPA issue	May be ignored because it is not connected to a course

Table 3-3. Coding system for demographic questions

Question	Coding
How many online courses are you currently enrolled in?	0= 1 course 1=2 courses 2=3 courses 3=4 courses
Are you enrolled in an 8 week or 16 week online course?	0= 8 weeks 1=16 weeks
Are you in a cohort?	0=no cohort 1=cohort
Are you a degree seeking student or a non-degree seeking student?	0=non-degree student 1=degree seeking student
Have you completed your online course OR on track to successfully complete the course?	0=no 1=yes
How many online courses have you completed?	0= No courses 1=1 course 2=2 courses 3=3 courses 4=4 courses 5= more than 4 courses
What is your gender?	0=male 1=female
How old are you?	0=20-29 years old 1=30-39 years old 2=40-49 years old 3= over 49 years old
Do you live within driving distance to the University of Florida in Gainesville, FL?	0=no 1=yes
What is your preferred learning style?	0= auditory learner 1= kinesthetic learner 2= visual learner
What is your strongest "multiple intelligence"?	0= Visual/Spatial 1= Verbal/Linguistic 2= Logical/Mathematical 3= Bodily-Kinesthetic 4= Musical/Rhythmic 5= Interpersonal 6= Intrapersonal

CHAPTER 4
PRESENTATION AND ANALYSIS OF DATA

As stated in Chapter 1, this study employed quantitative methods to examine if teaching presence and the sense of community act as predictors of perceived student learning in online courses. This chapter is organized by the study research questions posed in Chapter 1, followed by an analysis of the group difference for the perceived student learning score, and concluding with a review of the responses to the open-ended questions.

Study Research Questions

How do teaching presence and the sense of community function as predictors for perceived student learning in an online course?

a. What is the strength of the relationship between teaching presence and the sense of community?

b. What is the strength of the relationship between teaching presence and perceived student learning?

c. What is the strength of the relationship between the sense of community and perceived student learning?

Demographic Reporting of the Sample

In order to create a clear picture of the students who completed the online survey, a description of the sample of participants will be presented. The demographic questions for this study are presented at the end of the survey following the informed consent (Appendix B), the perceived learning question (Table 4-1), the Teaching Presence Scale (Table 4-2), and the Classroom Community Scale (Table 4-3). The demographic questions were optional.

The sample was made up of 115 students comprised of 102 women (89%), 11 men (10%), and two students who did not respond to the gender question (1%). This sample size represents 19% of the students enrolled in online courses at the College of Education during the Fall 2008 semester. The sample was divided in terms of living within driving distance to campus; 58% of

the students stated that they lived within driving distance to campus and 42% of the students did not. In terms of distance from the UF campus in Gainesville, one student stated that he/she lived 6.5 hours from Gainesville, Florida, while another student reported he/she lived in China. Additionally, the length of the courses varied for participants in this study, with 54% of the students reporting that they were enrolled in an eight-week course and 46% of the students reporting that they were enrolled in a sixteen-week course. The sample represented students who were enrolled in one course (55%) and students enrolled in multiple courses.

Of the students in the sample, 15% reported their preferred learning style as auditory, 21% as kinesthetic, and 64% as visual. Additionally, the students reported their strongest multiple intelligence as Verbal/Linguistic (33%), Visual/Spatial (23%), Logical/Mathematical (15%), Interpersonal (13%), Bodily-Kinesthetic (7%), Musical/Rhythmic (5%), Intrapersonal (4%), and Naturalistic (0%).

A total of 57% of the students reported being a part of a cohort program. This means students take designated courses for their degree program and are often grouped with the same students each online term. Most of the students who completed the survey reported that they were taking online courses to earn a degree (81%) and that they were on target for successfully completing the course (95%). For 14% of the students, the fall 2008 course enrollment was their first online course. The remaining students reported they had completed one online course (10%), two online courses (21%), three online courses (11%), four online courses (9%), and more than four online courses (35%).

Answering Question One

The first research question to be addressed was how do teaching presence and the sense of community act as predictors for perceived student learning in an online course?

In order to answer this question, a multiple linear regression analysis was performed using SPSS. The independent variables were teaching presence and the sense of community, and the dependent variable was perceived student learning. All 115 study participants completed the entire survey, allowing for confidence in the responses in terms of having a complete data set (Table 4-4). Nevertheless, it is important to make sure all statistical assumptions for multiple linear regression were met before exploring the data in detail.

All four of the assumptions of multiple linear regression analysis were met. Independence was met by asking students to complete the survey once even if they were enrolled in multiple courses. The other three assumptions- linearity, normality, and homoscedasticity- were all checked using the scatterplot of residuals against predicted scores. The scatterplot showed points equally above and below the line (normality), in the general shape of a line (linearity), and equally distributed across all levels (homoscedasticity).

One data point was explored as a possible outlier based on having a standardized residual of more than 3.3. A review of the Mahalanobis distance of the point (29.79), which was higher than the critical value for two independent variables (13.82), further suggests that the point is an outlier. Based on the methodology set out in Chapter 3, the outlier would only be removed if the maximum Cook's distance was greater than one. For the current study, the maximum Cook's distance was .578, so the data point remained in the data set because the point did not cause undue influence on the multiple linear regression model.

The unique contribution of teaching presence and sense of community was determined by reviewing the standardized coefficients Beta values. The standardized coefficient Beta values were chosen because the measurements of the independent variables have unique scales. The independent variable that provided the most unique contribution to explaining perceived student

learning was the sense of community (β= .522) when the variance by all other variables in the model was controlled (Table 4-5). The sense of community made a significant (p=.001) unique contribution of 13% to the prediction of the dependent variable, which was determined by squaring the part correlation (.363*.363= .13). For every standard deviation unit (SD=13.82) change in the sense of community, the perceived student learning score rose .522 of one standard deviation unit (SD=2.01), which is equal to 1.04 points on the nine-point perceived student learning response. In addition, teaching presence made a statistically significant unique contribution (β= .198, p= .049) of 2% to the prediction of the dependent variable, which was determined by squaring the part correlation (.138*.138= .02). For every standard deviation unit (SD=16.94) change in the teaching presence, the perceived student learning score rose .198 of one standard deviation unit, which is equal to .40 points on the nine-point perceived student learning response. Therefore, the multiple regression model equation for predicting the perceived student learning score is Y_1=.877+.023X_1+ .077X_2; whereas X_1 is the value for the Teaching Presence Scale and X_2 is the value for the Classroom Community Scale.

While the part correlations reflect the unique contribution of the independent variables, the shared variance was not accounted for in the values. While the unique contribution of teaching presence and the sense of community can explain 15% of the variance of perceived student learning, the combination of the unique contributions and the shared variance can explain 45.1% (Table 4-6), $F_{(2,112)}$=47.766, p<.001, of the variance of perceived student learning (Table 4-7). The adjusted R square value of .451 indicated that teaching presence and the sense of community together can predict 45.1% of the variance of perceived student learning. The adjusted R square has been reported because the value provides a better estimate of the true population value when the sample size is small.

In summary, multiple regression analysis was used and the results presented included the adjusted R square (.451), ANOVA ($p<.001$), and the standardized β coefficient of each component variable ($\beta= .522$ $p<.001$, $\beta=.198$ $p<.049$). The data indicated that relative to each other, the sense of community exerted the greatest influence on perceived student learning. Most importantly, the data concluded that teaching presence and the sense of community can predict 45.1% of the variance of perceived student learning. The square root of the adjusted R square (square root of .451= .67) provided an estimate of the effect size. For this study, .67 is a large effect according to Cohen (1988). Therefore, the null hypothesis was rejected indicating that teaching presence and sense of community do act as predictors for perceived student learning.

Answering the Research Sub-Questions

In order to answer all of the research sub-questions, correlations coefficients were used. A correlation describes the linear relationship between two continuous variables in terms of strength and direction. The strength is described by a number between -1 and 1, while the direction is based on whether the number is positive or negative. A number closer to positive one indicates the two variables have a positive relationship, meaning the two variables move in the same direction (as teaching presence increases, the sense of community increases). A number closer to negative one indicates the variables have a negative or inverse relationship, meaning the two variables move in opposite directions (as teaching presence increases, the sense of community decreases). A value close to zero suggests that a relationship does not exist.

The assumptions for correlations include: normality, linearity, homoscedacity and independence (Shavelson, 1998), which were all checked as part of the multiple regression analysis. This data set met all assumptions.

The Product Pearson correlation coefficient (r) was .718, n= 115, p<.001 when investigating the linear relationship between the two independent variables of teaching presence and the sense of community. Based on the guidelines set out by Cohen (1988), the relationship was strong because the Product Pearson correlation coefficient (r) is greater than .5 and positive because the number is a positive number. In summary, as teaching presence increased, so does the sense of community (Table 4-8). Therefore, the null hypothesis of sub-question A was rejected indicating there is a relationship between teaching presence and sense of community.

While the null hypothesis was rejected, it is necessary to further investigate the relationship between the two independent variables to make sure that Multicollinearity is not an issue. Multicollinearity, which is a high correlation between the independent variables, produces unstable estimates of the partial regression coefficients (Shavelson, 1998). When the Product Pearson correlation coefficient (r) is close to 1.0, then the tolerance should be reviewed. The tolerance should be greater than .20 to rule out multicollinearity as an issue. For this study, the Product Pearson correlation coefficient was .718 and the tolerance was .484; therefore, multicollinearity was not an issue in the current study.

The Product Pearson correlation coefficient (r) was .573, n= 115, p<.001 when investigating the linear relationship between the teaching presence (IV) and perceived student learning (DV). Based on the guidelines set out by Cohen (1988), the relationship is strong because the Product Pearson correlation coefficient (r) was greater than .5 and positive. In summary, as teaching presence increased so does perceived student learning (Table 4-8). Therefore, the null hypothesis of sub-question B was rejected indicating there is a positive relationship between teaching presence and perceived student learning.

The Product Pearson correlation coefficient (r) was .664, n= 115, p<.001 when investigating the linear relationship between the sense of community (IV) and perceived student learning (DV). Based on the guidelines set out by Cohen (1988), the relationship is strong because the Product Pearson correlation coefficient (r) was greater than .5 and positive. In summary, as sense of community increased so does perceived student learning (Table 4-8). Therefore, the null hypothesis of sub-question C is rejected indicating there is a positive relationship between sense of community and perceived student learning.

Further Analysis

The characteristics of the student and the course were examined through independent samples t-tests and ANOVAs. The questions with only two options were analyzed using independent t-tests. The items which used the independent t-tests for analysis dealt with the length of the course, cohort membership, anticipated success of completing the current course, gender of the student, distance to campus, and whether or not the student enrolled in the course was seeking a degree or not. The questions with more than two responses were analyzed using a one-way between groups ANOVA with Tukey post hoc tests. The items explored with an ANOVA statistic included the total number of course enrollment, number of completed online courses, student's age, preferred learning style of the student, and the student's strongest multiple intelligence. Although different statistical analyses were performed to determine whether differences among the online students existed, the items are discussed in the same manner as presented in the online survey. The reader will note that the number of responses for the optional questions varies from 110 responses to 114 responses. No adjustments have been made to the data to equalize the number of responses.

Number of Online Courses

A one-way between-groups analysis of variance (ANOVA) was conducted to explore the impact of the current course load on the student's perception of learning. The students were divided into four groups: enrolled in one online course, enrolled in two online courses, enrolled in three online courses, and enrolled in more than three online courses. There was no significant difference, $F_{(3,113)} = .233$, p=.873, between groups based on the current course load of the student (Table 4-9).

Length of Online Course (8 or 16 weeks)

An independent-samples t-test was performed to compare the perceived student learning scores between students enrolled in an eight-week online course and students enrolled in a sixteen-week online course. There was a statistically significant difference in scores for students enrolled in an eight-week online course (M=6.6, SD= 1.93) and students enrolled in a sixteen-week online course (M= 5.74, SD= 2.03); $t_{(112)}$= 2.348, p=.021, (two-tailed). The effect size was calculated using eta squared (mean difference= .87, 95% CI: .14 to 1.61) which determined a moderate effect (Eta squared= .046) based on the length of the course on perceived student learning (Table 4-10).

Cohort Membership

An independent-samples t-test was performed to compare the perceived student learning scores between students enrolled in a cohort (M = 6.29, SD = 1.92) and students not enrolled in a cohort (M= 6.11, SD= 2.05); $t_{(109)} = .471$, p =.638, (two-tailed). There was no statistically significant difference between the two groups based on cohort enrollment (Table 4-11).

Degree Seeking vs. Non-Seeking

An independent-samples t-test was performed to compare the perceived student learning scores between students seeking a degree (M=6.68, SD= 1.43) and students not seeking a degree

(M= 6.09, SD= 2.13); $t_{(111)} = 1.239$, p =.218, (two-tailed). There was no statistically significant difference between the two groups (Table 4-12).

Course Completion

An independent-samples t-test was performed to compare the perceived student learning scores between students on track to successfully complete the current course (M=6.14, SD= 2.06) and students not on track to successfully complete the current course (M= 7.17, SD= .75); $t_{(111)}$=1.213, p=.228, (two-tailed). There was no statistically significant difference between the two groups (Table 4-13).

Online Courses Completed

A one-way between-groups analysis of variance (ANOVA) was conducted to explore the impact of the number of online courses completed on the student's perception of learning. The students were divided into five groups based on the number of completed courses: no courses (M=6.5, SD=2.45), one course (M=6.36, SD=2.16), two courses (M=6.29, SD=1.46), three courses (M=6.23, SD=1.24), 4 courses (M=5.6, SD=3.06), and more than four courses (M=6.13, SD=2.05). There was no significant difference, $F_{(5,108)}$= .276, p=.926, between groups based on the number of online courses completed prior to the current enrollment (Table 4-14).

Gender

An independent-samples t-test was performed to compare the perceived student learning scores between male and female students. There was no statistically significant difference (p=.159, two-tailed) in scores for males (M=5.45, SD= 2.5) and females (M= 6.33, SD= 1.89); $t_{(111)}$= -1.418, p=.159, two-tailed (Table 4-15). It is important to note that female students represented 90% of the participants in the sample.

Age

A one-way between-groups analysis of variance (ANOVA) was conducted to explore the impact of the age of the student on the student's perception of learning. The students were divided into four groups: 20-29 years old, 30-39 years old, 40-49 years old, and over 49 years old. A significant difference, $F_{(3, 110)} = 4.257$, $p = .007$, between groups was found. Post-hoc comparisons of the groups using Tukey HSD revealed a statistically significant difference at the $p < .05$ level in perceived student learning scores between the 20-29 year old students (M=5.38, SD= 2.19) and the over 49 years old students (M=7.12, SD= 1.03) (Table 4-16). The effect size was calculated using Eta squared (SS between groups= 47.68, Total SS= 458.36, Eta squared=.1) which reported a medium-large effect of the student's age on perceived student learning (Table 4-17).

Distance from UF Campus in Gainesville

An independent-samples t-test was performed to compare the perceived student learning scores between students within driving range of campus (M=6.07, SD= 1.96) and students not within driving range to campus (M= 6.31, SD= 2.08); $t_{(111)} = .616$, $p=.539$, two-tailed. There was no statistically significant difference between the two groups based on the distance from campus (Table 4-18).

Learning Style

A one-way between-groups analysis of variance (ANOVA) was conducted to explore the impact of the student's preferred learning style on the student's perception of learning. The students were divided into three groups: auditory learners (M= 6.0, SD= 1.41), kinesthetic learners (M= 6.26, SD= 1.86), and auditory learners (M= 6.19, SD= 2.19). There was no significant difference, $F_{(2,110)}=.091$, $p =.913$, between groups based on the preferred learning style (Table 4-19).

Multiple Intelligences

A one-way between-groups analysis of variance (ANOVA) was conducted to explore the impact of the student's strongest multiple intelligence on the student's perception of learning. The students were divided into eight groups: Visual/Spatial (M= 5.96, SD= 2.34), Verbal/Linguistic (M= 6.41, SD= 1.98), Logical/Mathematical (M= 6.38, SD= 1.93), Bodily-Kinesthetic (M= 6.13, SD= 1.73), Musical/Rhythmic (M= 6.60, SD= 1.67), Interpersonal (M= 6.36, SD= 1.50), Intrapersonal (M= 6.00, SD= 1.79), and Naturalistic (no responses). There was no significant difference, $F_{(6,103)}$=.197, p=.977, between groups based on the reported strongest multiple intelligence (Table 4-20).

Student insight based on open-ended response questions

The final part of the instrument included two open-ended questions. One question gave students an opportunity to elaborate on any of their survey responses, and the second question gave students an opportunity to share their insight into teaching presence and the sense of community in online courses.

Several of the responses could be categorized as course evaluation comments where students explained what they liked and disliked about the course and the instructor which were not included unless they were focused on teaching presence or the sense of community. The following student comments address aspects of teaching presence in the online course in which the respondent participated:

> I am in two on-line courses this semester. one well-managed and the other poorly managed. Professor should not be assigned on-line course if they do not know how to handle to [the] technology involved, if they do not know how they will provide feedback. Students should not need to be mailing and emailing assignments to professor.

> I am currently taking two graduate online courses. One of my instructors is ex[c]ellent at responding to posts and answering questions. I really feel like I am lear[n]ing in this class. My other class is exactly the opposite. The instructor takes a week or more to answer questions and I feel as if I am accomplishing nothing by taking part in the class.

Additionally, some students provided insight to the sense of community in an online course. Examples of these comments include:

> The online course encourages independent work, but does not facilitate student-to-student interaction. I do not know the names of literally more than half the students in my online course.
>
> The sense of community among most of the cohorts was wonderful and we learned a lot from each other and from sharing our teaching experiences.

Most of the responses detailed aspects of both teaching presence and the sense of community, and even noted the interplay of the constructs. Examples of these comments include:

> This is a class that should have been labeled independent study. The professor has not made weekly contact that helps us understand or create a community so we can learn from each other.
>
> My other classes have been better--much engagement from the professors and better interactions. (those classes were part of a cohort)
>
> It felt fine for teacher & student presence - but then I'm not a real social animal needing lots of discussion. I really enjoyed exploring and learning on my own - with great guidance from the professor and text and online video demos.
>
> not much dialogue, from cohort or professor. TA is communicative.
>
> Moodle needs to be taken better advantage of. No strong sense of community. Instructors are well intentioned but the design of course does not promote collaborative learning. Discussions are awful; they might as well be assignments. There is little in the way of a "conversation". Discussion topics are "canned" as if they were copied and pasted from another course. I think more a fault of design than the instructor's course management, though. They are doing their best, I think. Overall not bad but could be improved.
>
> Our cohorts taught us a lot. The professors felt they should stay out of discussions so we didn't learn much directly from them. I didn't feel they had really instructed us, more that they judged and graded us.
>
> Although the others enrolled in this course are very supportive and easy to communicate with, I feel as though I cannot express my views freely because I am in fear of the professor giving me a poor grade if I state something she may not agree with.

The responses to the open-ended questions provided a place for the students to describe the positive and negative aspects of online course in the College of Education at the University of

Florida, and gave the researcher further insight in the constructs of teaching presence and the sense of community which may not have been captured in the survey.

Table 4-1. Perceived student learning responses

Response	N	%
0	5	3.6
1	3	2.1
2	5	3.6
3	9	6.4
4	5	3.6
5	22	15.7
6	18	12.9
7	39	27.9
8	27	19.3
9	7	5.0

Table 4-2. Teaching Presence Scale responses

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Overall, the instructor for this course clearly communicated important course goals (for example, provided documentation on course learning objectives).	3	11	3	45	53
Overall, the instructor for this course clearly communicated important course topics (for example, provided a clear and accurate course overview).	6	9	3	41	56
Overall, the instructor for this course provided clear instructions on how to participate in course learning activities (for example, provided clear instructions on how to complete course assignments successfully).	5	12	4	40	54
Overall, the instructor for this course clearly communicated important due dates and time frames for learning activities that helped me keep pace with this course (for example, provided clear and accurate course schedule, due dates, etc.).	3	12	4	41	55
Overall, the instructor for this course helped me take advantage of the online environment in a way that assisted my learning (for example, provided clear instructions on how to participate in online discussion forums).	7	11	10	40	47
Overall, the instructor for this course helped students understand and practice the kinds of behaviors acceptable in online learning environments (for example, provided documentation on netiquette, i.e., polite forms of online interaction).	7	13	17	39	39
Overall, the instructor for this course was helpful in identifying areas of agreement and disagreement on course topics that assisted me to learn.	8	12	29	33	33

Overall, the instructor for this course was helpful in guiding the class towards understanding course topics in a way that assisted me to learn.	7	9	13	47	39
Overall, the instructor for this course acknowledged student participation in the course (for example, replied in a positive, encouraging manner to student submissions).	3	14	4	41	53
Overall, the instructor for this course encouraged students to explore new concepts in this course (for example, encouraged "thinking out loud" or the exploration of new ideas).	7	11	13	39	45
Overall, the instructor for this course helped keep students engaged and participating in productive dialogue.	6	15	10	48	36
Overall, the instructor for this course helped keep the participants on task in a way that assisted my learning.	7	12	17	46	33
Overall, the instructor for this course presented content or questions that helped me learn.	5	10	10	43	47
Overall, the instructor for this course focused discussion on relevant issues in a way that helped me learn.	5	10	11	47	42
Overall, the instructor for this course provided explanatory feedback that helped me learn (for example, responded helpfully to discussion comments or course assignments).	11	13	11	40	40
Overall, the instructor for this course helped me to revise my thinking (for example, correct misunderstandings in a way that assisted my learning).	8	10	22	43	32
Overall, the instructor for this course provided useful information from a variety of sources that assisted my learning (for example, references to articles, textbooks, personal experiences, or links to relevant external websites).	7	6	11	36	55

Table 4-3. Classroom Community Scale responses

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
I feel that students in this course care about each other.	0	7	32	65	18
I feel that I am encouraged to ask questions.	3	12	16	51	40
I feel connected to others in this course.	5	14	27	62	14
I feel that it is hard to get help when I have a question.	43	48	13	12	6
I do not feel a spirit of community.	25	57	22	14	4
I feel that I receive timely feedback.	12	12	16	49	33
I feel that this course is like a family.	15	28	42	29	8
I feel uneasy exposing gaps in my understanding.	25	60	11	17	9
I feel isolated in this course.	25	59	21	14	3
I feel reluctant to speak openly.	39	52	7	21	3
I trust others in this course.	0	12	26	73	11
I feel that this course results in only modest learning.	30	47	22	15	8
I feel that I can rely on others in this course.	3	10	32	65	12
I feel that other students do not help me learn.	27	59	23	10	3
I feel that members of this course depend on me.	6	26	36	48	6
I feel that I am given ample opportunities to learn.	4	7	18	60	33
I feel uncertain about others in this course.	19	49	35	16	3
I feel that my educational needs are not being met.	49	41	12	14	6
I feel confident that others will support me.	5	8	31	69	9
I feel that this course does not promote a desire to learn.	56	44	7	10	5

Table 4-4. Descriptive statistics

Variables	Mean	Standard Deviation	N
Perceived Student Learning	6.19	2.01	115
Teaching Presence Scale	49.89	16.94	115
Classroom Community Scale	54.11	13.82	115

Table 4-5. Coefficients

Variables	Standardized Coefficients Beta	T	Sig	95% Confidence Interval for Beta Lower Bound	95% Confidence Interval for Beta Upper Bound	Correlations Part
(Constant)		1.621	.108	-.203	2.031	
TPS	.198	1.987	.049	.000	.047	.138
CCS	.522	5.231	.000	.047	.105	.363

Table 4-6. Multiple regression model summary

Variables	R	Adjusted R Square
Model 1	.6716	.451

Note. Predictors: CCS, TPS

Table 4-7. ANOVA

	Sum of Squares	df	Mean Square	F	Sig
Regression	211.654	2	105.827	47.766	.000
Residual	248.138	112	2.216		
Total	459.791	114			

Table 4-8. Pearson product-moment correlation between variables

Variables	1	2	3
Perceived Student Learning	1	.573	.664
Teaching Presence Scale		1	.718
Classroom Community Scale			1

Table 4-9. Participant characteristics based on current enrollment

	n	Mean	SD	df (between)	df (Within)	F	n^2	p
1 online course	63	6.32	1.92	3	110	.233	.966	.873
2 online courses	44	6.02	2.12					
3 online courses	6	6.17	2.64					
More than 3 online courses	1	7						

Table 4-10. Course characteristics based on length of course

	n	Mean	SD	t	df	p	Eta Squared
8 weeks	61	6.61	1.93	2.348	112	.021	.047
16 weeks	53	5.74	2.03				

Table 4-11. Participant characteristics based on enrollment in a cohort

	n	Mean	SD	t	df	p
Cohort	63	6.29	1.92	.471	109	.638
Non-Cohort	48	6.11	2.06			

Table 4-12. Participant characteristics based on type of student

	n	Mean	SD	t	df	p
Degree-Seeking	91	6.68	1.43	1.24	111	.218
Non-Degree Seeking	22	6.09	2.13			

Table 4-13. Participant characteristics based on successfully completing course

	n	Mean	SD	t	df	p
Yes	107	6.14	2.06	1.21	111	.228
No	6	7.17	.75			

Table 4-14. Participant characteristics based on number of courses completed

	n	Mean	SD	df (between)	df (within)	F	n^2	p
0	16	6.50	2.45	5	108	.276	1.16	.926
1	11	6.36	2.16					
2	24	6.29	1.46					
3	13	6.23	1.24					
4	10	5.60	3.06					
More than 4	40	6.13	2.05					

Table 4-15. Participant characteristics based on gender

	n	Mean	SD	t	df	p
Male	11	5.45	2.50	-1.4	111	.159
Female	102	6.33	1.89			

Table 4-16. Participant characteristics based on age

	N	Mean	SD	Df (between)	Df (Within)	F	n^2	p
20-29	37	5.38	2.19	3	110	4.26	15.89	.007
30-39	28	6.32	2.33					
40-49	23	6.35	1.72					
Over 49	26	7.12	1.03					

Table 4-17. Summary of post hoc (Tukey) ANOVA results for significant differences based on age

	n	Mean	SD	SE	p	Eta Squared
20-29	37	5.38	2.19	.36		.1
Over 49	26	7.12	1.03	.20		
20-29 x over 49				.49	.004*	

*p<.05

Table 4-18. Participant characteristics based on driving distance to campus

	N	Mean	SD	t	df	p
Yes	65	6.08	1.96	.616	111	.539
No	48	6.31	2.08			

Table 4-19. Participant characteristics based on learning style

	n	Mean	SD	df (between)	df (Within)	F	n^2	p
Auditory Learner	18	6.00	1.41	2	110	.091	.374	.913
Kinesthetic Learner	23	6.26	1.86					
Visual Learner	72	6.19	2.19					

Table 4-20. Participant characteristics based on multiple intelligence

	n	Mean	SD	df (between)	df (Within)	f	n^2	p
Visual/Spatial	25	5.96	2.34	5	103	.97	.768	.977
Verbal/Linguistic	36	6.41	1.98					
Logical/Mathematical	16	6.38	1.93					
Bodily/Kinesthetic	8	6.13	1.73					
Musical/Rhythmic	5	6.6	1.67					
Interpersonal	14	6.36	1.50					
Intrapersonal	6	6.00	1.79					
Naturalist	0	0	0					

CHAPTER 5
CONCLUSION

This chapter includes a brief review of the study, highlighting its purpose, the research questions, and the methodology used to conduct the study and analyze the findings. Next, study findings from the data analysis performed will be deconstructed. Following the explanation of the study findings are implications and recommendations for practice and research. The chapter concludes with a summary of the significance of this study.

Review of the Study

The study was designed and implemented to determine whether teaching presence and sense of community act as predictors of perceived student learning in an online course. The research question and sub-questions include:

1. How do teaching presence and the sense of community function as predictors for perceived student learning in an online course?

    a. What is the strength of the relationship between teaching presence and the sense of community?

    b. What is the strength of the relationship between teaching presence and perceived student learning?

    c. What is the strength of the relationship between the sense of community and perceived student learning?

In addition to the research questions, several student and course characteristics were reviewed for group differences on the self-reported score of perceived student learning. For the implementation of this study, online students were informed of the research study through the use of an announcement posted on the online learning portal of the College of Education at the University of Florida. The announcement included a brief description of the survey and a link to the online survey. A corresponding email was also received by students. If students decided to enter the online survey, they completed the IRB consent form before starting the survey. The

online survey was available to participants for four weeks. Once the data collection was complete, a multiple linear regression analysis was completed to answer the main research question and a review of the correlation matrix was completed to answer the sub-questions. The demographic questions were analyzed with series of t-tests and ANOVAs. Open-ended questions provided additional insight into a student's view of teaching presence and the sense of community.

Deconstructing Study Findings

Study findings will be discussed by focusing on the major concepts being explored: teaching presence, sense of community, and perceived student learning. The first discussion of results addresses the concepts of teaching presence and sense of community. Immediately following is an examination of the findings related to perceived student learning.

Teaching Presence and Sense of Community

The main research question for this study examined how teaching presence and the sense of community function as predictors for perceived student learning in an online course. Study data revealed that teaching presence and sense of community do aid in the prediction of perceived student learning. The adjusted R square value (.451) from this study indicated teaching presence and the sense of community predicted 45.1% of the variance of perceived student learning. As an online educator, one can read the predictive variance as the glass is half-full or the glass is half-empty. Online educators adopting the glass is half-empty approach would seek to determine what other variables make up the 55% of the variance not accounted for by teaching presence and the sense of community. These factors might include the characteristics of the student and teacher, the content of the course, or even the technologies employed in the course. Online educators taking the glass is half full approach would think the predictive

variance of 45.1% is large enough to justify the need for reflection on how teaching presence and sense of community are developed in their online classes.

The sub-questions from this study sought to determine the influence of teaching presence, sense of community, and the interaction of teaching presence and sense of community had on perceived student learning. Data from this study noted the constructs of teaching presence (2%) and sense of community (13%) were individually important predictors of perceived student learning; however, their predictive nature was much greater (45.1%) when students report the existence of both teaching presence and a sense of community. Hence, the two concepts are intertwined when considering perceived student learning.

Further examination of the variance issues in the data with respect to sense of community and teaching presences provide additional insights for online educators and administrators. As noted above, the sense of community factor accounted for a greater unique contribution to the prediction of student learning than does teaching presence yet there was variation among the study participants. Study data from the Classroom Community Scale confirms that community does happen even when students are separated geographically. On average, participants scored 54 out of 80 points on the Classroom Community Scale; yet, the CCS scores ranged from 12-80 points. The large range of scores may be explained by the different needs of the learners, the design of the courses, or possibly the value placed on community by the teachers. Nevertheless, the general study findings note that while community may not be necessary for every learner's success, overall community does play a part in the student's perception of learning from an online course.

Data from the Teaching Presence Scale substantiates that online students felt teaching presence; however, the amount of teaching presence described by the students varied

considerably. On average, students scored a 50 out of 68 points on the Teaching Presence Scale with scores spanning 1-68 points. The large range of scores may be explained by the different needs of the learners, the course content, the experience of the teacher, or the personality of the teachers.

In order to more fully explore these concepts in conjunction with perceived student learning, multiple linear regression was used. When the study averages for sense of community and teaching presence and outlier values (such as entering in a zero for each factor) were entered into the multiple linear regression statistical equations, important implications regarding sense of community and teaching presence became more transparent (Table 5.1). These statistical equation results show that a student reporting a high sense of community and no teaching presence will report more learning from the course than a student reporting high teaching presence and no sense of community. Furthermore, a student reporting a high sense of community and no teaching presence will report more learning from the course than a student who reports an average amount of community and an average amount of teaching presence. Hence, this statistical model generated in this study supports the conclusion that sense of community may be one of the strongest aspects of successful online courses when explored through the lens of perceived student learning. This finding does not negate the importance of teaching presence; it merely highlights the importance of sense of community.

Through the open-ended questions, students indicated they believed teaching presence was created by: the teacher answering questions in a timely manner, taking part in the discussion, and understanding how the learning management system worked. Students noted differences in teaching presence by teacher and most responses reflected a need for teaching presence in an online course. The levels of community described varied among students. Some students

suggested that teachers helped to create a community within the course; other students stated that they did not know the other students in the class, and one student suggested the course should be classified as an independent study. The responses bring to light the differences from course to course and from teacher to teacher in regards to the level of teaching presence and the sense of community felt in an online course.

Perceived Student Learning

As perceived student learning is an important and critical variable in this study, it is essential the variation among groups be explored. The scores for perceived student learning ranged from zero to nine, with the most frequent response of 7 and the average response of 6.18. The response of 7 by thirty-nine students implies that most students think they learned from their current online course. Yet, several group differences emerged during data analysis. The age of the student and the length of the course were variables that produced statistically significant group differences. Additionally, there were interesting, although not statically significant, group differences for the number of completed online courses, the preferred learning style of the student, and the strongest multiple intelligence for the student. All of these differences will be further examined.

The first statistically significant group difference (Eta Squared = .1) in the score for perceived learning was for the responses regarding the student's age. Students reported their age in 10-year increments, starting from 20-29 years old and ending with over 49 years old. There were 37 students in the age range from 20-29 years old and 26 students in the age range of over 49 years old. Students who reported their age as over 49 years old averaged 7.12 out of 9 points on the perceived learning questions, while students who reported their age as between 20-29 years old only averaged 5.38 points on the perceived learning question. Of note is that the average score for perceived learning increased with the student's age. There are several possible

reasons for this discrepancy in response based on age, although the data does not reveal any insight to the discrepancy. Overall, study data does support the notion that students at any age can learn from an online course. Implications in regards to the differences by age will be discussed in the implications and recommendation section of this chapter.

The second statistically significant difference (Eta Squared= .47) in the score for perceived learning was for the responses regarding the length of the current course enrollment. Courses offered in the College of Education at the University of Florida are either eight weeks or sixteen weeks long. For the students who completed this question, 54% of the students reported they were enrolled in an eight-week course, while 46% of the students reported they were enrolled in a sixteen-week course. Students who were enrolled in an eight-week course averaged 6.61 points on the perceived learning question, while students who were enrolled in a sixteen-week course averaged 5.74 points on the perceived learning question. The reason for discrepancy by length of course is not apparent within the data set; however, these results would support programs offering courses for a shorter period of time than a typical face-to-face semester course, but equal in content, expectations, and rigor. Again, this will be further discussed in the implications and recommendation section of this chapter.

There were three non-statistically significant results that are also worth discussing. Students who were new to online learning reported higher levels of learning compared to students who had completed online courses prior to the current enrollment. While this difference was not significant, the results suggest that new online students easily acclimated to online learning in the College of Education at University of Florida. The reason for the difference is not clear from the data set; however, the methods of acclimating new online students should be reviewed and possibly replicated due to the success of new online students in courses.

The responses for preferred learning style and strongest multiple intelligence are interesting because there was no significant difference in these groups. Most students (64%) reported their preferred learning style was as a visual learner; however, the kinesthetic learners reported slightly greater levels of learning. As for the strongest multiple intelligence, the largest number of students reported verbal/linguistic as their strongest intelliegence. Interestingly, the highest level of perceived learning was reported by verbal/linguistic students. Nevertheless, the finding of no significant difference among preferred learning styles and multiple intelligence preferences is important to note because it demonstrates that all students can be successful in online learning.

Implications and Recommendations for Practice

The implications for this study are directed to the teachers of online courses, as well as, to the administrators of higher education and program directors of online learning. First and foremost, the high correlation of teaching presence and sense of community along with their combined ability to predict perceived student learning indicates that this has practical implications for online courses. Other findings with practical implications and recommendations include the age of the student, the length of the courses, and the ease of replication. Each of these findings will have their implications and/or recommendations for practice discussed.

Increasing Sense of Community and Teaching Presence

Study data revealed that teaching presence and the sense of community are predictors of perceived student learning. Therefore, it is critical for online teachers to make an effort to increase teaching presence and sense of community in online courses. There are many strategies for increasing sense of community and teaching presence. As this study found, the high correlation between teaching presence and the sense of community suggests that as one increases teaching presence then the sense of community will increase or as you increase the sense of

community then teaching presence will increase. Additionally, the high correlation suggests that some of the methods for increasing teaching presence and the sense of community could be the same. Based upon the literature base, the following suggestions for practice will be arranged under the themes of instructional design and organization and directed facilitation (Garrison et al., 1999).

Instructional Design and Organization

When designing an online course, the online teacher should consider the technologies available and their affordances; the organization of the course; and the system for assessing students in the course. Every technology implemented within the courses must be reviewed based on the technology's strengths and weaknesses, the technology's ease of use, and the technology's availability to students. Technologies that provide a venue for supporting teaching presence and the sense of community should be added to the online course if the technology is readily available to students and does not detract from the learning. Some current technologies that support the development of teaching presence and the sense of community include, but are not limited to: video conferencing, instant messenger, and movies, presentations, and screen captures that use the teacher's voice for narration. In addition, discussion boards are excellent for developing teaching presence and the sense of community. Discussion topics and the teacher provided prompts should encourage students to incorporate readings, presentations, and personal experiences. Deadlines will need to be published for three different aspects of the discussion, which include: initial postings, responses to peers, and summary of postings. The online teacher will need to publicly highlight strong initial postings and responses to peers and privately suggest improvements through email for postings or responses that do not meet the course standards. Different students in the course should be responsible for publishing a summary of the entire conversation and this should take place with discussions throughout the course. Having students

generate this summary provides a big picture of the different opinions and facts that were presented by students and the online teacher.

In addition to the tools of the course, the teacher will need to decide how the course will be presented to online learners. One of these decisions includes how and when course modules or topics are made available to participants. Generally, there are two approaches to this. First, all course modules or topics can be opened at the beginning of the course enabling students to work ahead if they so desired. If the instructor clearly specifies when students must be posting this method, although providing students with autonomy to work ahead, can still promote a sense of community as all students will be required to participate in discussions and group projects within the same time frame. A second approach is to have modules available only during specific times. This requires students to work through the course at same pace. The online teacher needs to evaluate his or her audience to determine the approach that would best meet the needs of the student.

In terms of promoting overall learning, teaching presence, and sense of community, the syllabus, due dates, explanations of assignments, and the methods for evaluation must be clear and consistent on all course documents. Teachers who want to promote a strong sense of community will assign greater value to assignments that are community-centered, for example, discussion boards and partner projects.

Directed Facilitation

The online teacher must also scaffold students into working toward a sense of community as well as encouraging each learner to become a part of the teaching presence in the course. As the course begins, a wise use of time is on student and teacher introductions. Students can post a profile to include: current job, reason for enrolling in the course, area of interests, hobbies, location, and other interesting facts. This introduction can allow students to showcase their

creativity as this can be done in many methods with Internet 2.0 technologies. Students can post their profiles with videos, podcasts, images, and more. The teacher and teaching assistants, if applicable, should post a similar profile so they will be viewed as part of the learning community.

In addition to the profile, students should be required to post a picture of his or her face on the learning management system. This provides the "recognition" needed for teachers and students. Imagine how a student would feel if he or she walked past the online teacher and wasn't recognized. Having a picture of the person does promote that sense of community among students and the teacher. In addition, the teacher should take the time to create a printable document that can act as a cheat sheet for remembering names, faces, and profiles of the students in the class. This cheat sheet should be made available to students so that they can quickly put a name and face to each discussion board posting, thus helping to create a feeling of community. The introduction, the student picture, and the cheat sheet are all methods for promoting and developing community.

The online teacher's role of communicator is critical. An online teacher must be able to communicate through text, at the very least, to clear up misunderstandings, to demonstrate he or she is an active member of the community, to evaluate course assignments, and to encourage students to successfully complete the course. Again, Internet 2.0 technologies allow teachers to communicate with video chats, whiteboards, and more. Furthermore, using these technologies can foster sense of community and teaching presence in the course.

Communication is not just teacher-driven, so it is important for the teacher to provide venues of communication for students who are confused, concerned, or just have a question. This type of communication can be addressed through email, instant messenger, chat rooms, or

video conferencing. The online teacher should provide their students with their preferred method of communication and also provide students with guidance on how much time might elapse before the community (students and the teacher) responds. Having realistic expectations for communication reduces frustration among community members.

The results of this study provides evidence indicating that a teacher who spends time developing a sense of community and teaching presence should have students reporting higher levels of perceived student learning than online teachers who do not focus on these two constructs. However, although both teaching presence and sense of community were shown to be important, the multiple linear regression statistical equations noted that when using the lens of perceived student learning, establishing a sense of community is the most critical. Hence, sense of community should be an area to devote curricular, technological, and support resources when circumstances prohibit efforts being given to both sense of community and teaching presence.

The Age of the Student

Within this study, it was evident was that age played a role in a student's perception of learning. As the age of the students increased, so did the perception of learning. This finding could be interpreted as "younger students learn less", "older graduate students learn more", or "the experience that comes with age contributes to the learning". Each of these interpretations lead to different implications. For instance, younger graduate students may not report as much learning because the course may be a requirement rather than a course in which the student chose to enroll. Conversely, older students may report higher levels of learning because they have chosen to enroll in the course or because they are more independent in their learning endeavors. While age may be significant, the experience that comes with age may be the justification for the difference in perceived learning. Students with more experiences may be able to make more connections between the new learning occurring in the course and their prior experiences.

While the reason for the discrepancy of perceived learning based on age is unclear from the study data, the implication is that online teachers need to use strategies that address differences in age and experience issues related to learning. For courses that are required as part of a degree program, the online instructor highlight the big ideas in the course and how these ideas contribute to the big picture of the concept, field, etc. being studied. The instructor and students could come together to develop a list of why this learning is important to know again fostering a sense of community and connectedness. If the online instructor notices that students may be lacking prior knowledge or experiences to anchor the new knowledge being gained in the course, the instructor should consider ways to scaffolding the development of new schemas. Instructors could be providing videos of the experience or allowing students who have the needed prior knowledge to share their experience.

The Length of the Online Course

From an analysis of the group differences, the student's perception of learning was significantly different between an eight-week course and a sixteen-week course. Students in the eight-week course reported higher levels of learning when compared to students enrolled in a sixteen-week course. The online courses in the College of Education at the University of Florida are only offered in eight and sixteen week lengths, so it is impossible to conclude that eight weeks is the perfect length for an online course. The implications of this finding suggest that online learning does not need to follow the same format as a traditional, face-to-face semester course. Students in online courses may learn more when they have no time to procrastinate in progressing through the course or completing the assignments. In addition, online students may be able to stay focused for the entire course when the course is only eight weeks in length. From the teacher's perspective, an eight-week course may be easier to facilitate because students have no time to procrastinate and students proceed through the course at the same speed; however, the

course may become too time-intensive and impossible to manage when there are only eight weeks in which to cover the subject matter. Online teachers and the students can create schedules to help everyone stay on track. This process will foster a sense of community and encourage students to share their strategies for success in a shorter (or longer) course.

On a side note, program directors or administrators of higher education may consider offering online courses in two eight-week sessions each semester. This model may provide more opportunities for enrolling in more courses in an academic year, while also decreasing the number of courses in which the students are concurrently enrolled.

Ease of Replication

The instrument employed in this study, which was a combination of three previously validated instruments, was easy to disseminate and analyze, thus making the instrument a tool that can be replicated for small studies by individual teachers or in large studies by administrators in higher education. The ease of integration may prompt online teachers to use the survey for self-reflection. This is valuable to online teachers because they can evaluate teaching presence and the sense of community within their course. If their scores are low for either teaching presence or the sense of community they can use the data as a baseline score for evaluating changes that they make to the course in hopes of increasing teaching presence and the sense of community.

In addition to the replication by an individual teacher, administrators in higher education may choose to use the instrument in this study as a method to reflect on an entire online program. Administrators are seeing an increase in student enrollment (Allen & Seaman, 2008); however, they are seeing higher drop-out rates in online learning than in traditional, face-to-face courses (Willging & Johnston, 2004). With a focus on decreasing drop-out rates, this instrument and the resulting data can provide a tool for administrators to develop a rationale for support structures

that promote quality-learning experiences for every student and to design training on increasing teaching presence and the sense of community for online learning.

Recommendations for Research

Based on the results of this study, there is clearly a need to continue the investigation of the function of teaching presence and the sense of community as predictors of perceived student learning with larger sample sizes and different populations. In addition, the results of the study brought to light areas of research that should be further explored using qualitative methodology. This section will explore the issues of all can learn, gender, influence of the online teacher, and finding other variables which influence perceived student learning. Finally, this section will conclude with ideas that would have strengthened the current study and interesting observations that should be considered for future research studies.

All Can Learn

The data analysis concluded there was not a group difference based on the student's preferred learning style or the student's strongest multiple intelligence preference. This 'no significant difference' finding is imperative to the future of online learning. This finding means anyone can learn in online courses. The implication from this finding means that because online teachers in the College of Education at the University of Florida are reaching every type of learner within their course, these teachers should be finding ways to share their success with other colleges within UF or other online programs. At the same time, it is critical that additional research be conducted to determine if these findings with learning style and strongest multiple intelligence are limited to education graduate students or whether this expands to other audiences (e.g., K-12, non-education fields, etc.).

Gender

The sense of community has been found in other studies (Rovai, 2002a, 2002b) to be significantly higher for females. In this study, the sample was made up of 102 females, 10 males, and 3 non-respondents. The disproportional survey submission by one gender (female) could have played a role in the predictive nature of community. Several other studies (Dawson, 2006; Ouzts, 2006; Rovai, Wighting & Liu, 2005) noted an abundance of female respondents to online surveys and others (Rovai, 2002a) noted that women are more community-centered than men. This leads to the question, would this study have produced similar results if the study population was predominately male? Future research studies should aim to use the same methodology within different populations, including more gender-balanced populations and also more male-dominated populations. Future studies could help to determine if traditionally female-dominated disciplines report greater levels of community compared to traditionally male-dominated disciplines.

The Influence of the Online Teacher

This study did not examine the actions of the online teaching in establishing sense of community and teaching presence among the course participants. Future research studies could compare teaching presence and the sense of community based on the role of the teacher (graduate student, adjunct, or professor) or the level of the students (K-12, undergraduate, or graduate) and actions of the teacher (what specific instructional and communication strategies were used). Students most likely experience different levels of teaching presence and the sense of community based on the online teacher's role, actions, and audience level.

Finding Other Variables the Influence Perceived Student Learning

This research study relied on correlations to explore influences on perceived student learning. While the study determined that 45.1% of the variance of perceived student learning

can be predicted by teaching presence and the sense of community, there are other factors that affect perceived student learning that were not included in this study. Future research is necessary to identify other factors that influence perceived student learning. From the analysis of group difference from the current study, the additional factors may be related to the age or the length of the course. The students could be divided based on their response to perception of learning into groups representing low, medium and high scores for follow-up interviews. The follow-up interviews may help online teachers decipher why young students reported lower levels of learning compared to older students. Additionally, this strategy could be used to examine the group differences related to the length of the online course. Hence, research studies to explore the optimal length for an online course should be crafted and implemented. Moreover, based upon the review of literature, specifically the Community of Inquiry framework (Garrison et al., 1999), the additional factors may be related to social presence, which is the ability of students to present themselves as real people, or to cognitive presence, which is the ability to construct meaning through sustained communication.

Another recommendation for further research is based on the success of the teachers in this study for reaching students with different preferred learning styles, different multiple intelligences, as well as new online students. This success should be furthered explored to see what the online teachers are doing to meet the needs of so many different types of learners. This inquiry may take the form of interviews with the online teachers or content analysis of the courses.

Strengthening the Current Study

As the researcher and her dissertation committee crafted the current dissertation study, many decisions regarding the collection of demographic variables were made in order to increase the response rate and to keep the identity of the participants anonymous. Therefore, demographic

variables such as program area, year in the degree program, and cohort were not correlated to the participant's response. However, being able to connect these important variables to the overall findings would have been very beneficial in terms of understanding the audience for this study and how being a part of an existing community influences what takes place in individual online courses.

Interesting Observations

When considering the population for this dissertation study, there are several observations that provoke interesting questions for further research. Although most of these observations have been subtly alluded to in previous sections of this chapter, it was concluded that making these questions explicit would benefit future researchers. Therefore the topics of gender and academic fields as related to sense of community, teaching presence, and perceived learning will be highlighted in this brief section of this chapter.

This study was conducted in the College of Education that historically serves a predominately female population. Existing literature on females purport the preference of females is a social nature for learning. This leads to the question of "Do online learners in historically male field (such as engineering) value a sense of community and teaching presence as measured by perceived student learning?" Are the concepts of sense of community and teaching presence "soft science only" concepts or do are they learning concepts that transcend to all academic areas. It is hoped that online studies in more of the traditionally "hard sciences" will include concepts such as sense of community, teaching presences as related to perceived student learning will be conducted.

Summary

The purpose of the study was to determine if the constructs of teaching presence and the sense of community function as predictors of perceived student learning in an online course.

Each participating online student completed an online survey comprised of an informed consent, an item regarding their perception of learning (Richmond et al., 1987), the Teacher Presence Scale (Shea et al., 2005), the Classroom Community Scale (Rovai, 2001), student and course characteristic questions, and open-ended questions. The responses were transformed into three variables following the procedures set out by the authors of each instrument. Survey results were analyzed using a multiple linear regression, a correlation matrix, and a series of t-tests and ANOVAs. The data brings to light the importance of both teaching presence and the sense of community in an online course because the two constructs were able to predict 45.1% of the variance for perceived student learning. There were two statistically significant group differences in the perceived student learning score. First, students enrolled in eight-week courses reported their learning higher than students enrolled in sixteen-week courses. Second, students over 49 reported their learning higher than students in the 20-29 age group.

The findings and the implications from this study are an essential stepping-stone to the future of online learning. While the sample size from this study was small compared to the number of students enrolled in online courses around the world, the study was able to bring to light two valuable constructs that have a predictive relationship with student learning. This connection to student learning is invaluable. This research study found that teaching presence and the sense of community have the ability to predict 45.1% of the variance of perceived student learning. Simply put, student learning, irrespective of the format of the course, occurs through interactions with a teacher and interactions with students.

Table 5-1. Practical application of equation

TPS Score (0-68)	CCS Score (0-80)	Predicted Perceived Student Learning Score (0-9)
68	80	8.601
68	0	2.441
0	80	7.037
50	54	6.185

APPENDIX A
SURVEY INSTRUMENT

1. IRB

1. Informed Consent

Please read this consent document carefully before you decide to participate in this study.

Protocol Title: An Examination of Teaching Presence and the Sense of Community on Perceived Student Learning

Purpose of the research study: The purpose of the study is to determine if teaching presence and the sense of community act as predictors of perceived student learning in online learning courses.

What you will be asked to do in the study:
You will be asked to complete an online survey with 51 questions using Survey Monkey.

Time required:
10-30 minutes

Risks and Benefits:
There are no risks associated with this study.

Compensation:
There is no compensation associated with this study.

Confidentiality:
Your name, e-mail address and IP address will not be collected. Your answers will remain anonymous.

Voluntary participation:
Your participation in this study is completely voluntary. There is no penalty for not participating.

Right to withdraw from the study:
You have the right to withdraw from the study at anytime without consequence.

Whom to contact if you have questions about the study:
Susan Jinks, Graduate Student, School of Teaching and Learning, PO BOX 117048, Gainesville, Fl, (352)246-1909, susanejinks@yahoo.com.

Colleen Swain, Ph.D. Associate Director of the School of Teaching & Learning/

Associate Professor & Graduate Coordinator School of Teaching and Learning, University of Florida, PO BOX 117048, Gainesville, FL, (352) 392-9191 ext. 264, cswain@coe.ufl.edu.

Whom to contact about your rights as a research participant in the study:
IRB02 Office, Box 112250, University of Florida, Gainesville, FL 32611-2250; phone 392-0433.

Agreement:
Please select “I accept” to continue with the survey. If you do not wish to complete the survey, please exit the website.

◯ I accept

2. Perceived Student Learning

NOTE:

If you are enrolled in more than one online course, please select one of the courses to think about when responding to survey items.

1. On a scale of 0-9, how much did you learn in this course, with 0 meaning you learned nothing and 9 meaning you learned more than in any other course you've had?

◯ 0 ◯ 1 ◯ 2 ◯ 3 ◯ 4 ◯ 5 ◯ 6 ◯ 7 ◯ 8 ◯ 9

3. Sense of Community

NOTE:

If you are enrolled in more than one online course, please select one of the courses to think about when responding to survey items.

1. Please respond to the following statements based on the online course that you are currently enrolled in at UF.

	Strongly disagree	Disagree	Neutral	Agree	Strongly Agree
I feel that students in this course care about each other.	○	○	○	○	○
I feel that I am encouraged to ask questions.	○	○	○	○	○
I feel connected to others in this course.	○	○	○	○	○
I feel that it is hard to get help when I have a question.	○	○	○	○	○
I do not feel a spirit of community.	○	○	○	○	○
I feel that I receive timely feedback.	○	○	○	○	○
I feel that this course is like a family.	○	○	○	○	○
I feel uneasy exposing gaps in my understanding.	○	○	○	○	○
I feel isolated in this course.	○	○	○	○	○
I feel reluctant to speak openly.	○	○	○	○	○
I trust others in this course.	○	○	○	○	○
I feel that this course results in only modest learning.	○	○	○	○	○
I feel that I can rely on others in this course.	○	○	○	○	○
I feel that other students do not help me learn.	○	○	○	○	○
I feel that members of this course depend on me.	○	○	○	○	○
I feel that I am given ample opportunities to learn.	○	○	○	○	○
I feel uncertain about others in this course.	○	○	○	○	○
I feel that my educational needs are not being met.	○	○	○	○	○
I feel confident that others will support me.	○	○	○	○	○
I feel that this course does not promote a desire to learn.	○	○	○	○	○

4. Teaching Presence

NOTE:

If you are enrolled in more than one online course, please select one of the courses to think about when responding to survey items.

1. Please respond to the following statements based on the online course that you are currently enrolled in at UF.

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Overall, the instructor for this course clearly communicated important course goals (for example, provided documentation on course learning objectives).	◯	◯	◯	◯	◯
Overall, the instructor for this course clearly communicated important course topics (for example, provided a clear and accurate course overview).	◯	◯	◯	◯	◯
Overall, the instructor for this course provided clear instructions on how to participate in course learning activities (for example, provided clear instructions on how to complete course assignments successfully).	◯	◯	◯	◯	◯
Overall, the instructor for this course clearly communicated important due dates and time frames for learning activities that helped me keep pace with this course (for example, provided clear and accurate course schedule, due dates, etc.).	◯	◯	◯	◯	◯
Overall, the instructor for this course helped me take advantage of the online environment in a way that assisted my learning (for example, provided clear instructions on how to participate in online discussion forums).	◯	◯	◯	◯	◯
Overall, the instructor for this course helped students understand and practice the kinds of behaviors acceptable in online learning environments (for example, provided	◯	◯	◯	◯	◯

documentation on netiquette, i.e., polite forms of online interaction).					
Overall, the instructor for this course was helpful in identifying areas of agreement and disagreement on course topics that assisted me to learn.	○	○	○	○	○
Overall, the instructor for this course was helpful in guiding the class towards understanding course topics in a way that assisted me to learn.	○	○	○	○	○
Overall, the instructor for this course acknowledged student participation in the course (for example, replied in a positive, encouraging manner to student submissions).	○	○	○	○	○
Overall, the instructor for this course encouraged students to explore new concepts in this course (for example, encouraged “thinking out loud” or the exploration of new ideas).	○	○	○	○	○
Overall, the instructor for this course helped keep students engaged and participating in productive dialogue.	○	○	○	○	○
Overall, the instructor for this course helped keep the participants on task in a way that assisted my learning.	○	○	○	○	○
Overall, the instructor for this course presented content or questions that helped me learn.	○	○	○	○	○
Overall, the instructor for this course focused discussion on relevant issues in a way that helped me learn.	○	○	○	○	○
Overall, the instructor for this course provided explanatory feedback that helped me learn (for example, responded helpfully to discussion comments or course assignments).	○	○	○	○	○
Overall, the instructor for this course helped me to revise my thinking (for example, correct misunderstandings in a way that assisted my learning).	○	○	○	○	○

Overall, the instructor for this course provided useful information from a variety of sources that assisted my learning (for example, references to articles, textbooks, personal experiences, or links to relevant external websites).	○	○	○	○	○

5. demographics

NOTE:

If you are enrolled in more than one online course, please select one of the courses to think about when responding to survey items.

1. How many online courses are you currently enrolled in?

◯ 1 ◯ 2 ◯ 3 ◯ more than 3

2. Are you enrolled in an 8 week or 16 week online course?

◯ 8 weeks ◯ 16 weeks

3. Are you in a cohort?

◯ Yes ◯ No

4. Are you a degree seeking student or a non-degree seeking student?

◯ Degree seeking student ◯ Non-degree seeking student

5. Have you completed your online course OR on track to successfully complete the course?

◯ Yes ◯ No

6. How many online courses have you completed?

◯ 0 ◯ 1 ◯ 2 ◯ 3 ◯ 4 ◯ more than 4

7. What is your gender?

◯ male ◯ female

8. How old are you?

◯ Between 20-29 years old ◯ Between 30-39 years old ◯ Between 40-49 years old ◯ Over 49 years old

9. Do you live within driving distance to the University of Florida in Gainesville, FL?

◯ Yes ◯ No

10. What is your preferred learning style?

◯ Auditory Learner ◯ Kinesthetic Learner ◯ Visual Learner

11. What is your strongest "multiple intelligences"?

◯ Visual/Spatial Intelligence ◯ Bodily/Kinesthetic Intelligence ◯ Intrapersonal Intelligence

◯ Verbal/Linguistic Intelligence ◯ Musical/Rhythmic Intelligence ◯ Naturalist Intelligence

◯ Logical/Mathematical Intelligence ◯ Interpersonal Intelligence

6. Optional Open Ended

1. Please feel free to elaborate on any of the response you provided in this survey.

2. Please feel free to add any comments about your experiences with teaching presence and sense of community in the online learning environment.

Thank you for taking the time to complete this survey!

APPENDIX B
INFORMED CONSENT

Informed Consent
Protocol Title: An Examination of Teaching Presence and the Sense of Community on Perceived Student Learning

Please read this consent document carefully before you decide to participate in this study.

Purpose of the research study: The purpose of the study is to determine if teaching presence and the sense of community act as predictors of perceived student learning in online learning courses.

What you will be asked to do in the study:

You will be asked to complete an online survey with 51 questions using Survey Monkey.

Time required:

10-30 minutes

Risks and Benefits:

There are no risks associated with this study.

Compensation:

There is no compensation associated with this study.

Confidentiality:

Your name, e-mail address and IP address will not be collected. Your answers will remain anonymous.

Voluntary participation:

Your participation in this study is completely voluntary. There is no penalty for not participating.

Right to withdraw from the study:

You have the right to withdraw from the study at anytime without consequence.

Whom to contact if you have questions about the study:

Susan Jinks, Graduate Student, School of Teaching and Learning, PO Box 117048, Gainesville, FL 32611, (352)246-1909, susanejinks@yahoo.com.

Colleen Swain, Ph.D. Associate Director of the School of Teaching & Learning/ Associate Professor & Graduate Coordinator School of Teaching and Learning, University of Florida, Box 117048, Gainesville, FL 32611, (352) 392-9191 ext. 264, cswain@coe.ufl.edu

Whom to contact about your rights as a research participant in the study:

IRB02 Office, Box 112250, University of Florida, Gainesville, FL 32611-2250; phone 392-0433.

Agreement:

Please select "I accept" to continue with the survey. If you do not wish to complete the survey, please exit the website.

LIST OF REFERENCES

Allen, I.E. & Seaman, J. (2008). Staying the course: Online education in the united States. Needham, MA: The Sloan Consortium.

Anderson, T., Rourke, L., Garrison, D.R. & Archer, W. (2001). Assessing teaching presence in a computer conferencing context. *Journal of Asynchronous Learning Network*. *5*(2), 1-17.

Arbaugh, J., & Hwang, A. (2006). Does "teaching presence" exist in online mba courses? *The Internet and Higher Education*, *9*(1), 9-21.

Baker, J. (2004). An investigation of relationships among instructor immediacy and affective and cognitive learning in the online classroom. *The Internet and Higher Education*, *7*(1), 1-13.

Bransford, J., Brown, A., & Cocking, R. (1999). *How people learn: Brain, mind, experience, and school*. Washington, D.C.: National Academies Press.

Buckley, K. (2003). *How principles of effective online instruction correlate with student perceptions of their learning*. Ed.D. dissertation, University of Central Florida, Retrieved April 3, 2009, from Dissertations & Theses: Full Text databases.

Chickering, A.W. & Gamson, Z.F (1987). Seven principles for good practices in undergraduate education. *AAHE Bulletin*. *39*(3), 3-7.

Chickering, A.W., & Gamson, Z.F. (1999). Development and adaptation of the seven principles for good practice in undergraduate education. *New Directions for Teaching and Learning, 80*, 75-81.

Cohen, J.W. (1988). *Statistical power analysis for the behavioral sciences* (2nd ed.). Hillsdale, NJ: Lawrence Erlbaum Associates.

Dawson, S. (2006). A study of the relationship between student communication interaction and sense of community. *The Internet and Higher Education, 9*(3), 153-162.

Dennen, V.P. (2006). From message posting to learning dialogues: Factors affecting learning participation in asynchronous discussion. *Distance Education, 26*(1), 127-148

Dewey, J. (1933). *How we think, a restatement of the relation of reflective thinking to the education process.* Boston: D.C. Health and Co.

Galloway, F. (2004). A methodological primer for conducting quantitative research in postsecondary education at the Lumina Foundation for Education. Retrieved January 22, 2008, from http://www.luminafoundation.org/research/researchbasics

Gardner, H. (1983). *Frames of mind: The theory of multiple intelligences*. New York: Basic Books.

Garrison, D., Anderson, T., & Archer, W. (1999). Critical inquiry in a text-based environment: Computer conferencing in higher education. *The Internet and Higher Education, 2*(2-3), 87-105.

Garrison, D. & Arbaugh, J.B. (2007). Researching the community of inquiry framework: Review, issues, and future directions. *The Internet and Higher Education, 10*(3), 157-172.

Garrison, D., & Cleveland-Innes, M. (2005). Facilitating cognitive presence in online learning: Interaction is not enough. *The American Journal of Distance Education, 19*(3), 133-148.

Graham, C., Cagiltay, K., Craner, J., Lim, B, Duffy, T. (2000). Teaching in a web based distance learning environment. *CRLT Technical Report*, 13, 1-26.

Gunawardena, C., Nolla, A., & Wilson, P. (2001). A cross-cultural study of group process and development in online conferences. *Distance Education, 22*(1), 85-121.

Gunawardena, C., & Zittle, F. (1997). Social presence as a predictor of satisfaction within a computer mediated conferencing environment. *American Journal of Distance Education, 11*(3), 8-26.

Hackman, M.Z. & Walker, K.B. (1990). Instructional communication in the televised classroom: The effects of system design and teacher immediacy on student learning and satisfaction. *Communication Education, 39*, 196-206.

Hinkle, D.E., Wiersma, W., & Jurs, S.G. (1994). Applied statistics for the behavioral sciences (3rd ed.). Boston: Houghton Mifflin Company.

Hutchins, H. (2003). Instructional immediacy and the seven principles: Strategies for facilitating online courses. Retrieved March 13, 2008, from http://www.westga.edu/~distance/ojdla/fall63/hutchins63.html

Lally, V., & Barrett, E. (1999). Building a learning community on-line: Towards socio-academic interaction. *Research Papers in Education, 14*(2), 147-163.

Leh, A. (2001). Computer-mediated communication and social presence in a distance learning environment. *International Journal of Educational Telecommunications, 7*(2), 109-128.

Liu, X., Magjuka, R., Bonk, C. & Lee, S. (2007). Does sense of community matter? An examination of participants' perceptions of building learning communities in online courses. *Quarterly Review of Distance Education, 8*(1), 9-24.

Mandernach, B.J., Gonzales, R.M. & Garrett, A. (2006). An examination of online instructor presence via threaded discussion participation. [electronic version] Journal of Online Learning and Teaching. 2(4), retrieved January 20, 2008, from http://jolt.merlot.org/vol2no4/mandernach.htm

Marikar, S. (2006, January, 19). Gym class goes virtual students in Minnesota forgo locker rooms for laptops. *ABC News*, Retrieved April 11, 2009, from http://abcnews.go.com/GMA/Atio/Story?id=1513680&page=1

McCroskey, J.C., Sallinen, A., Fayer, J.M., Richmond, V.P., & Barraclough, R.A. (1996). Nonverbal immediacy and cognitive learning: A cross-cultural investigation. *Communication Education, 45*, 200-211.

Moore, M.G. (1989) Editorial: Three types of interaction. *The American Journal of Distance Education. 3*(2), 1-6.

Moore, M. G. (1991). Editorial: Distance education theory. *The American Journal of Distance Education, 5*(3), 1-6.

Moore, M. G. (1997). Theory of transactional distance. In Keegan, D. (Ed.), *Theoretical principles of distance education*. Oxford, UK: Routledge.

Moore, M. G., & Kearsley, G. (1996). *Distance education: A systems view*. Belmont, CA: Wadsworth Publishing Company.

Newlin, M. & Wang, A. (2002). Integrating technology and pedagogy: Web instruction and seven principles of undergraduate education. *Teaching of Psychology, 29*(4), 325-330.

Ouzts, K. (2006). Sense of community in online courses. *The Quarterly Review of Distance Education, 7*(3), 285-296.

Pallant, J. (2007). *SPSS survival manual: A step by step guide to data analysis using SPSS for windows (3rd ed.)*. Berkshire, England: Open University Press.

Palloff, R., & Pratt, K. (1999). *Building learning communities in cyberspace: Effective strategies for the online classroom*. San Francisco: Jossey-Bass Publishers.

Picciano, A. (2002). Beyond student perceptions: Issues of interaction, presence, and performance in an online course. *Journal of Asynchronous Learning Network, 6*(1), 21-40.

Robertson, J.S., Grant, M.M., & Jackson, L. (2005). Is online instruction perceived as effective as campus instruction by graduate students in education? *The Internet and Higher Education, 8*(1), 73-86.

Richmond, V. P., Gorham, J. S. & McCrosky, J.C. (1987). The relationship between selected immediacy behaviors and cognitive learning. In M. McLaughlin (Ed.) *Communication Yearbook 10*. Beverly Hills, CA: Sage.

Rourke, L., Anderson, T. Garrison, D.R, & Archer, W. (1999). Assessing social presence in asynchronous text-based computer conferencing. *Journal of Distance Education*, *14*(3), 51-70.

Rovai, A.P. (2001). Building classroom community at a distance: A case study. *Educational Technology Research and Development, 49*(4), 33-48.

Rovai, A.P. (2002a). Development of an instrument to measure classroom community. *The Internet and Higher Education, 5*(3), 197-211.

Rovai, A.P. (2002b). Sense of community, perceived cognitive learning, and persistence in asynchronous learning networks. *The Internet and Higher Education, 5*(4), 319-332.

Rovai, A.P. (2003). The relationships of communicator style, personality-based learning style, and classroom community among online graduate students. *The Internet and Higher Education, 6*(4), 347-363.

Rovai, A.P. & Barnum, K.T. (2003). On-line course effectiveness: An analysis of student interactions and perceptions of learning. *Journal of Distance Education, 18*(1), 57-73.

Rovai, A. P., & Ponton, M. K. (2005). An examination of sense of classroom community and learning among african american and caucasian graduate students. Journal of *Asynchronous Learning Networks, 9*(3), 75-90.

Rovai, A. P. & Wighting, M. J. (2005). Feelings of alienation and community among higher education students in a virtual classroom. *The Internet and Higher Education, 8*(2), 97-110.

Rovai, A. P., Wighting, M. J., & Liu, J. (2005). School Climate: Sense of classroom and school communities in online and on-campus higher education courses. *The Quarterly Review of Distance Education 6*(4), 361-374.

Shavelson, R. (1995). *Statistical reasoning for the behavioral sciences (3rd ed.)*. Boston: Allyn and Bacon.

Shea, P. (2006). A study of students' sense of learning community in online environments. *Journal of Asynchronous Learning Network, 10*(1), 35-44

Shea, P., Li, C., & Pickett, A. (2006). A study of teaching presence and student sense of learning community in fully online and web-enhanced college courses. *The Internet and Higher Education, 9*(3), 175-190.

Shea, P., Li, C., Swan, K., & Pickett, A. (2005). Developing learning community in online asynchronous college courses: The role of teaching presence. *Journal of Asynchronous Learning Network, 9*(4), 59-82.

Shea, P., Pickett, A., & Pelz, W. (2003). A follow-up investigation of "teaching presence" in the SUNY learning network. *Journal of Asynchronous Learning Network, 7*(2), 61-80.

Sheenhan, K.B. (2001). E-mail survey response rates: A review. *Journal of Computer-Mediated Communications*, 6(2), retrieved on May 16, 2008 from http://www.blackwell-synergy.com/doi/full/10-1111/j.1083-6101.2001.tb00117x

Skinner, E. (2007). Building knowledge and community through online discussion. *Journal of Geography in Higher Education, 31*(3), 381-391.

Stein, D.S., Wanstreet, C.E., Calvin, J., Overtoom, C., & Wheaton, J.E. (2005). Bridging transactional distance gap in online learning environments. *The American Journal of Distance Education, 19*(2), 105-118.

Stevens, J. (1996). *Intermediate Statistics: A modern approach (2nd ed.)*. Mahwah, NJ: Lawrence Erlbaum Associates.

Swan, K. (2001). Virtual interactivity: design factors affecting student satisfaction and perceived learning in asynchronous online courses. *Distance Education, 22*(2), 306-331.

Swan, K. (2002a). Building learning communities in online courses: The importance of interaction. *Education, Communication & Information, 2*(1), 23-49.

Swan, K. (Ed.). (2002b). *Immediacy, social presence and asynchronous discussion (Vol. 3).* Needham, MA: The Sloan Consortium.

Swan, K. (Ed.). (2003). Learning effectiveness online: What the research tells us. In Borne, J. & Moore, J.C. (Eds). *Elements of quality online education, practices and direction*. Needham, MA: Sloan Center for Online Education.

Tabachnich, B.G. & Fidell, L.S. (2007) *Using multivariate statistics (5th ed.)*. Boston: Pearson Education.

Tinto, V. (1993). *Leaving College: Rethinking the causes and cures of student attrition. (2nd Ed.).* Chicago: University of Chicago Press.

Vygotsky, L. (1978). *Mind in Society*. Cambridge, MA: Harvard University Press.

Wallace, R. (2003). Online learning in higher education: A review of research on interactions among teacher and students. *Education, Communication & Information, 3*(2), 241-280.

Waltonen-Moore, S., Stuart, D. & Newton, E. (2006). From virtual strangers to a cohesive online learning community: The evolution of online group development in a professional development course. *Journal of Technology and Teacher Education, 14*(2), 287-311.

Wang, M., Sierra, C. & Folger, T. (2003). Building a dynamic online learning community among adult learners. *Education Media International, 40*(1/2), 49-62.

Wellman, B. (1999). The network community: An introduction to networks in the global village. In Wellman, B. (Ed.) *Networks in the Global Village*. Boulder, CO.: Westview Press.

Willging, P. A. & Johnston S. D. (2004). Factors that influence students' decision to dropout of online courses. *Journal of Asynchronous Learning Networks*, *8* (4), 105-118.

Wilson, G., Stacey, E. (2004). Online interaction impacts on learning: Teaching the teachers to teach online. *Australasian Journal of Educational Technology, 20*(1), 33-48.

Wright, K. (2005). Researching internet-based populations: Advantages and disadvantages of online survey research, online questionnaire authoring software packages, and web survey services. [electronic version] Journal of Computer-Mediated Communication, 10(3), retrieved May 20, 2008, from http:// http://jcmc.indiana.edu/vol10/issue3/wright.html

BIOGRAPHICAL SKETCH

Susan Elizabeth Jinks was born in Columbia, MD in 1975. She received a Bachelor of Science degree in Elementary Education from Shippensburg University of Pennsylvania, a Master of Education in Curriculum and Instruction focused on Instructional Technology from George Mason University, and a Master of Education in Curriculum and Instruction focused on Multilingual/Multicultural Education from George Mason University. She has taught 3rd grade general studies, 6th grade history, 9th grade technology, and middle & high school technology. In addition, Susan worked as a graduate assistant for three semesters teaching preservice teachers and teachers how to teach effectively while integrating technology into their curriculum. Her most recent position was as a technology coordinator for a high school. Her areas of interest for research include: online learning, emerging technologies in the K-12 environment, and methods for increasing teachers' effective use of technology in secondary schools.