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## EXAMINING THE ROLE OF THE INTRODUCTORY VIDEO IN THE DEVELOPMENT OF TEACHING PRESENCE IN ONLINE INSTRUCTION

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EXAMINING THE ROLE OF THE INTRODUCTORY VIDEO IN THE  
DEVELOPMENT OF TEACHING PRESENCE IN ONLINE INSTRUCTION

By

Bojan K. Lazarevic

A DISSERTATION

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(Instructional Technology)

Under the Supervision of Professor Allen Steckelberg

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May 2011

# EXAMINING THE ROLE OF THE INTRODUCTORY VIDEO IN THE DEVELOPMENT OF TEACHING PRESENCE IN ONLINE INSTRUCTION

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University of Nebraska, 2011

Advisor: Allen Steckelberg

This study presents and discusses findings regarding the benefits of video delivery in online instruction. The implementation of asynchronous video adds quality to the online learning experience by providing missing elements such as visual contact with the instructor and verbal input. Specifically, the study addresses whether the implementation of a short asynchronous introductory video in a primarily text-based online course has an effect on students' perception of teaching presence. In addition, the second aim of this study is to test whether an asynchronous introductory video can enhance student's course engagement and performance. Finally, the study seeks answer if there is an interrelationship between teaching presence, student's engagement and student's performance.

This study utilizes a sequential explanatory mixed methods research design. The research process consists of two phases which involves collecting qualitative students' responses after gathering quantitative data to explain or follow up on the quantitative results in more depth. The study also includes elements of the experimental method as part of the educational intervention. In particular, the research uses posttest only control

group design. Participants in this study were undergraduate students (N=87) enrolled in an online course in the domain of entomology at the University of Nebraska-Lincoln, during the spring semester 2010.

The data analysis includes both quantitative and qualitative analyzing procedures. The quantitative analysis relies on descriptive statistics, t-tests, and SEM-multiple course comparison, while qualitative analysis uses an in-vivo coding approach. The study results indicate that announcement delivery method has a limited impact effect on students' perception of teaching presence. Video based announcement is a statistically significant determinant only for one aspect of teaching presence, which is instructors' facilitation role in the online course. In addition, the results show that video delivery can make virtual learning more personalized, by emphasizing the interaction between students and their instructor. Finally, the research shows that students' study habits are critical for the online learning engagement and overall coursework.

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## CHAPTER 1: INTRODUCTION

From the well-known proverb *repetitio est mater studiorum* to the constructivist and student-centered approach of virtual learning settings, centuries have passed and learning formats have evolved. The changing environment has turned teachers and students into virtual characters. Today, we know that *being virtual* reflects the new trend in higher education. Being a virtual student typically implies studying in a learning environment without face to face contact with an instructor or other students. A lonely student facing numerous icons, links, text files, and discussions threads within a learning management system is the commonly adopted image of online instruction. Currently, the majority of online courses, particularly those delivered by one of the many learning management systems such as Blackboard or Moodle, provide mainly text-based learning experiences (Deborah, 2006; Hartsell & Yuen, 2006; Krovitz, 2009; Michelich, 2002; Savery, 2005).

Because it occurs primarily in written form with little or no auditory, visual, and non-verbal input, the instructional value of a virtual environment is under permanent reconsideration and critique. However, recent advancements in educational and web technology provide not just tools for text-based communication and instruction, but opportunities for distance teachers and students to hear and see each other. Various tools are available for improving the effectiveness of online learning, but there is still ongoing debate and disagreement concerning what types of course design and instructional materials would be the best for meeting learners' needs and compensating for disadvantages of the virtual environment.

In addition to issues associated with course design and the effectiveness of instructional materials, online instructors face challenges related to students' perception of the online learning environment. Learning is a social phenomenon, and the lack of personal contact with instructors may lead to serious issues such as alienation, drop-out, low motivation, etc. Furthermore, one learns by receiving information from the outside world through several different channels, such as audio, visual, and kinetics (Liu & Ginther, 1999; Sankey, 2003; Taylor, 2005). In the traditional teaching setting, an instructor is physically present in a classroom and guides the learning process by simultaneously providing audio, visual, and non-verbal input such as facial expressions and gestures. Undoubtedly, these integral elements of traditional educational process are beyond the scope of the learning experience for the majority of the online students.

The teaching presence in instruction plays an equally important role regardless of the type of the educational setting (virtual or non-virtual). Based on social learning theories (Bandura, 1971; Vygotsky, 1962), recent studies have focused more attention on the teaching presence and social context (Aragon & Johnson, 2002) as essential elements of learning success. A growing body of literature supports the idea that there are two main lines of research that address the problem of teaching presence in online instruction. The majority of studies focus on defining the concept of teaching presence and its components. According to some authors (Anderson, Rourke, Garrison & Archer, 2001; Garrison & Anderson, 2003; Garrison, Anderson & Archer, 2000; Shea, Swan, Li, & Pickett, 2005), teaching presence is one of the three constitutive elements of the Community of Inquiry model. The Community of Inquiry model "illustrates the multifaceted components of teaching and learning in a text-based environment"

(Anderson, Rourke, Garrison & Archer, 2001, p.3). The role of teaching presence in online courses refers to the instructional design and organization of coursework activities, direct instruction, and discourse facilitation. It is interesting to point out that this definition of teaching presence is associated with text-based online learning.

Other studies (Griffiths & Graham, 2009; Ice, Curtis, Phillips, & Wells, 2007; Belfer & Morgan, 2005) are more focused on exploring how web technologies and educational multimedia may enhance the level of teaching presence. To enhance the level of teaching presence, these studies applied various tools and intervention techniques, including:

- a) audio and video conferencing systems,
- b) asynchronous audio and video feedback,
- c) instant messaging, and
- d) audio files attached to emails.

Overall findings indicate that different forms of communication and delivery methods may enhance teaching presence in online instruction. In addition, Hampel and Stickler (2005) argue that the instructional delivery medium modifies the form of communication and interaction between students and instructors. Therefore, these studies suggest that the level of teaching presence in primarily text-based online courses can be enhanced by using appropriate instructional tools and techniques to deliver educational content.

Therefore, the aim of this study is to examine the possibility of enhancing teaching presence by using asynchronous introductory videos in online instruction. The central research problem in this mixed methods study is teaching presence in an online

learning environment. Thus, *the key point of this educational intervention is to compare two teaching strategies based on different delivery methods to provide organizational information through weekly announcements aimed to guide students' coursework.*

### **Purpose Statement**

The purpose of this study is to explore the role of asynchronous video in developing teaching presence. Specifically, **the study addresses whether or not the implementation of a short asynchronous introductory video in a primarily text-based online course has a positive role in developing students' perception of teaching presence.** This study requires a sequential explanatory mixed methods research design.

### **Research Questions**

The focus of this study leads to the following research questions.

- a) To what extent does the introductory announcement delivery method affect teaching presence in primarily text-based online courses supported by LMS Blackboard?
- b) Is there a difference in student course engagement between students who view introductory announcement delivered as text and students who view them as asynchronous video?
- c) Is there a difference in student performance between students in online courses where introductory announcement is delivered in textual format and students in online courses where it is delivered via asynchronous video messages?



- d) Is there a difference in the interrelationships between teaching presence, student course engagement and student performances in the control and experimental groups of students?
- e) How does a change in delivery method contribute to the changes in students' perception of teaching presence, performance, and course engagement?

## **Methods**

This study used the sequential explanatory mixed methods design, and it involved collecting qualitative data after a quantitative phase to explain or follow up on the quantitative data in more depth (Creswell & Plano Clark, 2007). The study also included elements of the experimental method as part of the educational intervention phase within the sequential explanatory mixed methods research design. In the first phase of the study, quantitative data provided insight into the level of teaching presence and possible differences between the experimental and control groups of students. Qualitative data in the second phase of study facilitated a greater understanding of student perceptions regarding different delivery methods and possible techniques for enhancing the level of teaching presence in primarily text-based online instruction.

The research was conducted in the 2010 spring semester at the University of Nebraska-Lincoln. All participants in the study were volunteers enrolled in online courses supported by the learning management system Blackboard. Thus, the main criterion for selecting students was their willingness to participate in the study and their enrollment in the online course. The participants were recruited from the following undergraduate course: Insect Biology (ENTO115).

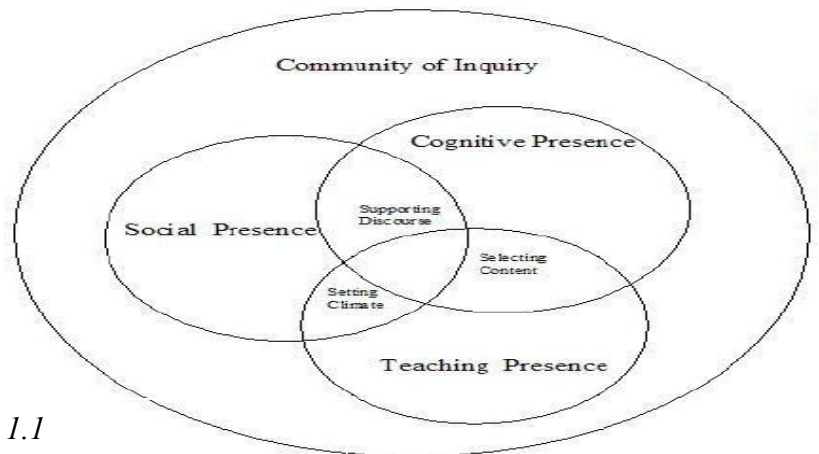
## Definition of Terms

### *Asynchronous Video:*

Asynchronous video as a format refers to a video file that has been pre-recorded and delivered to students through non-live transition. Asynchronous video instruction between the teacher and students occurs independent of time and location.

### *Community of Inquiry:*

According to Garrison and Anderson (2003), the Community of Inquiry model in a virtual environment is based on the following three different sub-concepts: cognitive presence, social presence and teaching presence (Figure 1.1 – next page).



*Figure 1.1*

### *Community of Inquiry Model*

The first sub-concept, cognitive presence, refers to the act of knowledge-building through class activities. The second sub-concept, social presence, refers to the development of

relationships among students in online courses. Lastly, teaching presence is the third, constitutive element of overall students' sense of community.

*Teaching Presence:*

According to Garrison and Anderson (2003), teaching presence can be defined as "the design, facilitation and direction of cognitive and social processes for the purpose of realizing personally meaningful and educationally worthwhile learning outcomes" (p.29). For the purpose of this study, I embraced Garrison and Anderson's (2003) definition of teaching presence. This definition of teaching presence has been widely accepted by other authors (Swan & Shih, 2005; Zhan & de Montes, 2007).

*Text-Based Course:*

For the purpose of this study, a text-based course implies that students in the course primarily used text-based educational materials (such as articles in .pdf format or books available in online format) as a source for discussing and reflecting on the main concepts and topics proposed in the course syllabus.

*Distance education:*

Instructors and students are physically separated by time and space.

### *Learning Management*

#### *System (LMS):*

A Learning Management System refers to the specific type of software purposefully designed for managing teaching and learning activities.

#### *Video Clip:*

“A short segment of videotape taken from a movie or produced locally. It is usually 3-5 minutes in length” (Schlosser & Simonson, 2006, p.205).

### **Assumptions**

Assumption one: Randomization. It is assumed that the random assignment of participants into control and experimental groups makes the two groups equivalent in terms of initial (prior) content knowledge and online learning experience. The random assignment of students into two groups provided a normal distribution of research subjects’ educational traits that may affect final intervention outcomes.

Assumption two: Quality of the research instruments. It is assumed that the statistical validity and reliability of the instruments (*Community of Inquiry Survey*) obtained in different populations is applicable to the subject population of this research. Therefore, the research instruments were adopted and the original parameters of the instruments’ internal validity and reliability were accepted without additional verification.

Assumption three: Student willingness. This assumption refers to *students’ willingness to give their best answers* in the qualitative phase of data collection. Also, it

is assumed that students were honest in providing answers on the instrument that was aimed to measure the level of teaching presence.

Assumption four: *Student capability*. Finally, it is assumed that participants in this study had the capacity to accurately judge and express their opinions about the research topic (i.e., teaching presence in online instruction).

### **Delimitations and Limitations**

The limitations of the study are due to the nature of the research design, the data collection procedure, the treatment implementation procedure, and finally the possibility of the generalization of findings. The characteristic that defines the boundaries of the research could be labeled the delimitations of the study. Delimitations and limitations for this particular study are the following:

- a) The length of the research intervention was one semester. Thus, findings from this study might not be generalizable to the student population where treatment has a different length.
- b) Due to the nature of the research design and sample characteristics, inferences that could be made are limited to people with a similar educational background and demographic.
- c) The findings from this study should be generalized to other student populations with caution, because it should be taken into consideration that different universities have different admission criteria.
- d) It is assumed that the personality of the online instructor and his/her teaching style in the virtual learning environment did not have any effect

on research findings. Also, it is assumed that the oral ability and narration technique of speaker/teacher (voice, diction, pronunciation, dynamic, vocabulary, etc.) were not critical for the intervention.

- e) The sample size was limited by the number of enrolled students to the aforementioned online courses. Thus, I was not able to select the participants for this study based on a similar demographic and educational background was.
- f) The measurement of the main variables, such as students' perception of teaching presence, was based on participants' self-reported information. Therefore, this method of data collection did not guarantee that responses objectively reflected participants in the study.

### **Significance of Study**

A literature search (Databases: Academic Search premier, PsycINFO, Primary Search, Business Source Premier and PsycARTICLES; from 1991 to 2008) failed to disclose research conducted in order to provide measurable evidence that introductory videos providing organizational information to students in text-based online courses have an impact on the level of teaching presence. Thus, there is a gap in the current literature regarding distance education and the instructional benefits of asynchronous introductory videos in online courses delivered through an LMS software platform. Therefore, this study added new findings to the body of literature in the area of online instruction. Furthermore, this study is unique because it explored the teaching presence issue with a sample of students enrolled in online courses in the area of insect biology. The design of

this study is also unique because of its sequential mixed methods research design.

Finally, this research study addressed the deficiency in current research methodology.

## **CHAPTER 2: LITERATURE REVIEW**

This chapter provides an overview of the current trends and concerns in the domain area of online instruction regarding the contemporary Community of Inquiry (CoI) model with an emphasis on the concept of teaching presence, as well as the instructional value of asynchronous video in the development of teaching presence in online instruction. It also addresses the possible implications of teaching presence on student coursework. Therefore the structural model is proposed to explain the relationship between teaching presence, student engagement in course activities, and learning performance. Finally, this literature review provides a brief description of the methodology for some studies concerning the Community of Inquiry model and teaching presence in online instruction.

### **Trends and Concerns in Online Instruction**

By tracing back the origin of distance education, it is possible to identify many different forms, teaching strategies, media, and techniques for delivering educational content to distance students. Since the very first correspondent courses were established by Isaac Pitman in the late 1800s, distance education has passed through significant transformations (Matthews, 1999; Schlosser, 1996). Print-based communication distance education courses have moved toward a student-centered approach with multiple levels of interaction based on a variety of multimedia.

According to Sherron and Boettcher (1997), the development of distance education greatly depends on advancements in educational delivery media and technology in general. Taking this criteria into consideration, Sherron and Boettcher (1997, p. 9) defined four generations of distance learning technologies and an equal



number of developmental stages of distance education. In *the first stage* (1850s-1960), the predominant approach was the implementation of just one delivery technology, such as printed media, radio, or TV. *The second stage* (1960s – 1980s) was a period of combining multiple technologies (TV audio & video cassettes, fax and printed media) without computers. *The third stage* (1985-1995) refers to the implementation of multiple technologies including computers and computer networking (email, chat sessions, bulletin boards using computers and networks, computer programs and internet resources, audio conferences, large-room video conferences, fax, print, etc.). Finally, *the last stage* (1995-present) of distance education development is a generation of multiple technologies, including high bandwidth computer technologies such as live video interactive learning and desktop video conferences via satellite.

Undoubtedly, a new wave of internet-based technologies has reinforced the concept of distance education. The old format of distance courses has gradually disappeared and currently, the predominant model of distance learning is web-based or online instruction. In Sherron and Boettcher's (1997) view, each new distance education technology has a unique advantage, provides different opportunities for distance learning, and enhances interaction between instructors and students. Typically, online courses are delivered via learning management systems (LMS) such as Blackboard, Angel, Moodle, etc. LMS's are applications that facilitate students' online learning and provide a solid framework for communication, sharing files, accessing online resources, and supporting a variety of multimedia content. Therefore, the LMS as a relatively new delivery format

for distance courses integrates the latest technological achievements in the domain of web-based educational technology.

Due to rapid technological progress, rich multimedia including flexible and interactive web applications are now available for implementation in an online learning setting. These new instructional tools have also become a point of interest for many researchers in recent years. A large body of literature has been generated emphasizing the role and characteristics of educational multimedia in distance learning (Bang, 1998; Bouras, et al. 1997; Ellis & Cohen, 2001; Jereb & Šmitek, 2006; Li, King & Kutscher, 2005; Tempelman-Kluit, 2006). Although there is still ongoing debate about the value of different multimedia tools in learning (Clark, 2001; Clark & Morrison, 2002; Clark 1983; Kozma, 1991; Kozma, et al., 1994; Rice, Hiltz & Spencer, 2005), many empirically-based studies have reported instructional advantages and benefits from using multimedia in learning (Brashears, Akers & Smith, 2005; Clark, Nguyen & Sweller, 2006; Issa & Cox, 1999; Mayer, 2001; etc.)

Regardless of the variety of available education multimedia and advanced learning management delivery systems, the majority of online courses still currently offer primarily text-based learning experiences to distance students. A comprehensive overview of the current use of multimedia in online instruction is provided in the research conducted by Adams (2006). The sample for this study was 534 online programs and courses (277 undergraduates and 307 at the graduate level) across 409 educational institutions. Findings showed that text-based delivery was the dominant method of sharing information and communication with students in all 409 universities. Instructors

mainly used discussion boards (including text documents as attachments) as communication tools and for course activities (N=313), while email was the main communication tool in 16.85% of courses (N=90). Only 67 universities used seven or more media types in distance education. Adams concluded “in spite of the advancement of new communication technologies that might add more channels of communication to text-based instruction to create a 'media-rich' learning environment, the delivery of course instruction online appears to rely heavily on email, chat and discussion boards” (p.9).

A study by Mitra and Hall (2003) also investigated the modalities of technology use in distance education with an emphasis on the concept of discursive practice. These two authors pointed out that current distance technologies provided new opportunities for teacher-student communication in distance courses. However, their main conclusion indicates “the fact that distance education often takes place with the use of text-based systems, leads to the re-thinking of the distance education classroom” (p. 20). In the same vein, other studies (Deborah, 2006; Hartsell & Yuen, 2006; Michelich, 2002; Savery, 2005) have reported that current online instruction provides primarily text-based learning experiences to students.

Clearly, these study results raise relevant concerns regarding the implementation of new media in distance courses and the promotion of the quality of online learning. By its nature, learning is a social phenomenon and the lack of personal contact with instructors in text-based courses may lead to some serious issues such as a low level of motivation, alienation, etc. Furthermore, the learning process is based on receiving information through several different channels such as audio, visual, and kinetics (Liu &

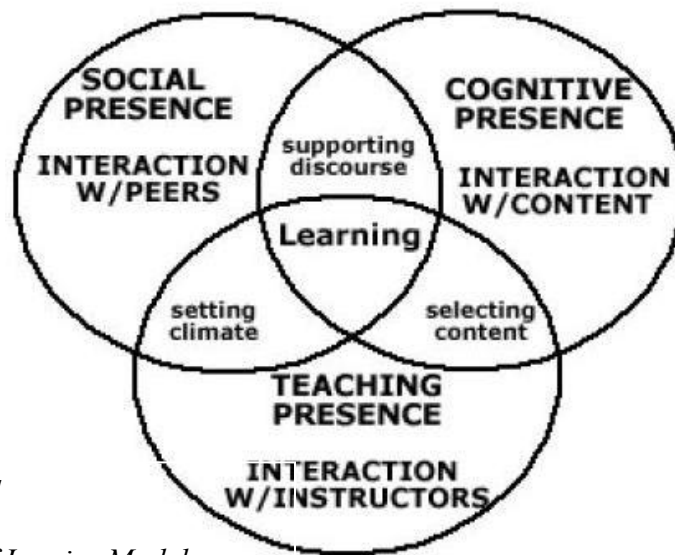
Ginther 1999, Sankey, 2003, Sheybani & Javidi, 2004; Taylor, 2005). In a face-to-face learning environment, an instructor is physically present in the classroom and guides the learning process by simultaneously providing audio, visual, and non-verbal input such as facial expressions, gestures, etc. However, these integral elements of the educational process are a missing part of online learning for the majority of students. Additionally, recent studies (Birk, 2004; Lam & McNaught, 2006) suggest that implementing adequately designed multimedia may enhance the learning experience and even compensate for the lack of teaching presence in an online environment.

Finally, the research results presented above raise the following questions: why is instructional multimedia not more incorporated into online instruction? Why don't instructors use more video or audio input to compensate for the major disadvantage of distance learning: the physical absence of the instructor? What are the barriers for implementing multimedia in online instruction? Is a primarily text-based learning environment sufficient for providing high quality instruction at a distance? How does one enhance teaching presence and online learning in a text-based environment?

### **Theoretical Framework - Community of Inquiry**

The dynamic and underlying elements of learning in primarily text-based distance courses is a controversial issue that has been discussed using many theories (e.g. Moore's (1993) Theory of Transactional Distance). The Community of Inquiry model, created by Garrison, Anderson and Archer (2000), is one of the most prominent conceptual frameworks used to explain and identify "the elements that are crucial prerequisites for a successful higher educational experience" (p.87). The Community of Inquiry model is

based on the assumption that successful distance learning requires three types of interaction (student-student, student-content and student-instructor) and three types of teaching presence, labeled as cognitive, social, and teaching presence (figure No. 2.1).



*Figure No. 2.1*

*Community of Inquiry Model*

Garrison, Anderson and Archer (2000) also suggest that the relationship between the three types of presence is essential for understanding the Community of Inquiry concept. Furthermore, these authors claim that “learning occurs in Community through the interaction of three core elements” (Garrison, Anderson & Archer, 2000, p. 88).

### **Cognitive Presence**

Cognitive presence is the most vital element of the three for achieving learning success in text-based online instruction. Cognitive presence refers to the “extent to which participants in any particular configuration of community of inquiry are able to construct meaning through sustained communication” (Garrison, Anderson & Archer, 2000, p. 89). Cognitive presence is associated with critical thinking and processes such as exploration,

integration, resolution, etc. However, in the authors' view, cognitive presence (student interaction with content) requires educational transaction and is not a sufficient element by itself for successful learning. Therefore, students need to interact with each other in such a way as to enhance social presence within a community of online learners.

Considering the social nature of learning, cognitive presence should be accompanied and supported with an adequate level of social presence (student-student interaction).

Cognitive presence depends on and is considerably reinforced by social presence in online courses.

### **Social Presence**

Social presence is the second constitutive element of the Community of Inquiry model. The authors (Garrison, Anderson & Archer, 2000) define social presence "as the ability of participants in a communication to project themselves socially and emotionally, as „real“ propel (i.e. their full personality) through the medium of communication being used" (p. 94). The main purpose of social presence is to promote cognitive presence and reinforce critical thinking through educational transaction and communication among peers enrolled in an online course. Empirically-based findings (Swan & Shih, 2005) have confirmed that the level of social presence is significantly related to students' satisfaction with text-based discussions and communication within distance courses. Finally, it is worth pointing out that proponents of the Community of Inquiry model (Rourke, Anderson, Garrison & Archer, 2001) suggest that the following three indicators of social presence be identified: affective response, cohesive response, and interactive response.

## **Teaching Presence**

In the Community of Inquiry model, the concept of teaching presence refers to the teachers' role in the text-based online learning environment. In Anderson, Rourke, Garrison, Archer's (2001) view, teaching presence can be defined as "the design, facilitation and direction of cognitive and social processes for the purpose of realizing personally meaningful and educationally worthwhile learning outcomes" (p. 5). The model of teaching presence or teaching roles in a text-based course consists of the following three interrelated sub-components: instructional design and organization, discourse facilitation, and direct instruction. These three authors consider teaching presence to be a balancing factor between the other two presences (social and cognitive) within an online Community of Inquiry. Garrison and Anderson (2003) regard teaching presence as an "essential service in identifying societal knowledge, designing experience that will facilitate critical discourse and reflection and diagnosing and assessing learning outcomes" (p.65).

In the current study, the concept of teaching presence was used as the main framework for understanding the implications of the research intervention. An in-depth analysis of the sub-components of teaching presence was provided, and a comprehensive review of the research regarding teaching presence issues in a text-based online learning environment was also presented in the following sections of this literature review.

Finally, it is notable to point out some recent contributions (Garrison, 2007; Arbaugh (2008a) in the development of the Community of Inquiry theoretical framework. For example, Arbaugh (2008a) hypothesized that the Community of Inquiry model might be used in predicting learning outcomes in online courses. Based on a sample of students

in 55 online courses in Midwestern US universities, the empirical findings support the author's concept of using the Community of Inquiry model to predict student learning and satisfaction with the delivery medium. According to Arbaugh, the purpose of the Community of Inquiry model is not just to provide a description of the three essential elements in text-based online instruction, but to be a "potentially powerful theoretical framework for explaining online learning effectiveness" (p.15). However, studies that use the Community of Inquiry model for predicting online learning outcomes are just the initial phase of development and implementation in the domain of online instruction. Therefore, Arbaugh argues that further research that uses both quantitative and qualitative methods is needed to move the understanding and implications of the current model of an online Community of Inquiry forward.

### **The Concept of Teaching Presence**

As stated above, the concept of teaching presence is used in the Community of Inquiry model, which reflects the multifaceted components in the process of teaching and learning in the text-based online environment (Garrison, Anderson & Archer, 2000). The concept of teaching presence refers to "the design, facilitation and direction of cognitive and social processes for the purpose of realizing personally meaningful and educationally worthwhile learning outcomes" (Anderson, Rourke, Garrison, & Archer, 2001, p. 5). The definition of teaching presence identifies the following three constitutive components: design and organization, discourse facilitation, and direct instruction. As defined, teaching presence is "regarded as main responsibility of the teacher" (Ling, 2007, p. 155) in an online learning environment, therefore implying a variety of roles that teachers have to undertake in online instruction.



### **Design and Organization**

Developing an online course is a demanding task and requires significant effort from instructors in setting up all the components of the educational process. Anderson, Rourke, Garrison, and Archer (2001) argue that teaching presence in distance education begins even before the official start of coursework. The online instructor is responsible for creating a course syllabus and structure, designing the course activities, selecting adequate readings, and managing assessment tools. In addition, the instructor provides support services to online students and guidelines regarding technical support and effective use of the learning management system. Creating an overall map of coursework or a “grand design” (p. 6) of the course is an integral part of the instructor’s responsibilities.

However, the instructor’s responsibility regarding course design and organization is not over by the time a course starts, but is a process that continues throughout the course. Maintaining course structure and functionality are additional tasks that each online instructor faces throughout coursework.

### **Facilitating Discourse**

Anderson, Rourke, Garrison, and Archer (2001) regard discourse facilitation as a critical component in maintaining student interest, motivation, and engagement in course activities. In order to fulfill this role, the instructor has to help students gain meaning of the content, identify areas of agreement and disagreement, and seek consensus and understanding. By modeling appropriate behaviors and providing encouragement to students, the online instructor tries to engage students in course activities. The authors

point out that facilitating discourse is not just the facilitation of social activities within the course, but also aims to “stimulate social process with a direct goal of stimulating individual and group learning” (Anderson, Rourke, Garrison, Archer, 2001, p.6). Finally, facilitating discourse includes other elements such as: responding to student comments, maintaining efficiency of discussions, raising important questions, assessing the efficacy of the process, etc.

### **Direct Instruction**

In a summary of the key points related to direct instruction provided by Arbaugh (2008a), this component of teaching presence is described as “the instructor provision of intellectual and scholarly leadership in part through the sharing of their subject matter knowledge with the students” (p. 3). Therefore, the instructor’s role includes checking students’ comments for accurate understanding, providing sources of information at the right time, focusing discussions in the appropriate direction, and scaffolding students’ knowledge in order to promote understanding. Anderson, Rourke, Garrison, and Archer (2001) have suggested that one of the instructors’ main concerns would be providing prompt and explanatory feedback on students assignments and other questions. Furthermore, confirming understanding through assessment and responding to questions related to technical issues are also part of the direct instruction component.

Overall, teaching presence and its components are extremely significant because they provide a holistic Community of Inquiry framework by binding all the elements together. Furthermore, teaching presence might be considered to be a balancing factor between social and cognitive presence within an online Community of Inquiry.

## **Teaching Presence Research**

The general concept of teaching presence proposed by Anderson, Rourke, Garrison, and Archer (2001) is supported by a large body of literature generated in the last eight years. The research findings regarding teaching presence to date are primarily quantitative. However, there has been an increasing recent tendency in conducting different types of research (qualitative and mixed methods) to explore the complex nature of teaching presence in online instruction. The following is a brief review of the most relevant studies in this area.

Shea, Swan, Li, and Pickett (2005) hypothesized a positive relationship between teaching presence and the student sense of community. As a theoretical research framework, they used Garrison and Anderson's Community of Inquiry model and Rovai's concept of the Online Learning Community (i.e., student sense of community). Participants in their study were 2036 university students enrolled in online courses in the 2004 summer semester at 32 colleges in the SUNY Learning Network. To measure the student perception of teaching presence and learning community, the authors utilized a modified Community of Inquiry survey (teaching presence subscale) and Rovai's Classroom Community Scale. The main assumption in this research that an online learning community can be established and promoted through effective instructional design and organization, discourse facilitation, and direct instruction was confirmed. The final results indicated that a stronger perception of teaching presence is associated with a stronger sense of learning community.

Direct facilitation as a part of teaching presence and the instructor role in online courses seems to be the strongest factor that affects the students' sense of online

classroom community. Based on these empirical findings, Shea, Swan, Li, and Pickett (2005) stressed the practical implications regarding the necessity of faculty preparation for online teaching, especially for providing effective discourse facilitation.

An interesting qualitative case study focused on a cross-cultural comparison of teaching presence within online courses was conducted by Murphy, Smith and Stacey (2002). Based on the Community of Inquiry model and concept of teaching presence, these authors compared the experiences of two online instructors who were teaching postgraduate courses in the United States and Australia. The study report showed that researchers were able to interpret qualitative findings within the Community of Inquiry model, and therefore pointed out the considerable validity of the model. Two common themes for both teachers were identified. First, the qualitative data suggested that the present Community of Inquiry model should be expanded to include issues related to the instructors' presence in "all student discussion spaces" (Murphy, Smith & Stacey, 2002, p.3). "All student discussion spaces" refers to discussions that are not primarily focused on educational content or assignments, such as private single and multilevel conferences and students' collaborative documents. The second common theme emphasized time management issues regarding teaching presence in online instruction. The authors concluded that there is a need for the development of teaching approaches for fulfilling the teaching presence role that are more efficient in the use of instructors' time.

A series of comprehensive research studies were conducted within the SUNY Learning Network at the State University of New York in order to examine the various aspects of teaching presence in online instruction. Shea, Fredericksen, Pickett and Pelz (2003) used the Community of Inquiry framework to assess teaching presence in distance

courses across the different areas of teaching and learning in higher education. Data collection took place during the 2002 summer semester. A teaching presence survey was sent by email and 1150 responses were received (about 15% of total student enrollment at the SUNY Learning Network universities). The authors' intent was to help teachers create and sustain teaching presence. The research aimed to assess the validity of the original teaching presence subscale proposed by Garrison, Anderson and Archer (2000). Therefore, the researcher asked students "to express their level of agreement or disagreement to statements eliciting responses related to teaching presence" (Shea, Fredericksen, Pickett and Pelz 2003, p.73). An additional purpose of this research was to provide data regarding the correlation between teaching presence in SUNY Learning Network online courses and student satisfaction and learning.

For each of the three components of teaching presence, the following findings were found. According to Shea, Fredericksen, Pickett and Pelz (2003), "approximately 85% of respondents expressed agreement about statements reflecting good practices in instructional design and organization as defined in the survey" (p. 14). Also, there was a positive correlation between instructional design and organization and levels of satisfaction and learning ( $r=.635$  for satisfaction and  $r = .588$  for reported learning). Students also agreed (73%) that the statements in the survey accurately reflected the construct of discourse facilitation. Students who reported high levels of discourse facilitation also reported high levels of learning and satisfaction ( $r=.64$  for satisfaction and  $r = .58$  for reported learning). Finally, the third set of data indicated that 76% of students agreed with statements related to direct instruction. In addition, the high level of satisfaction and perceived learning positively correlated with students' perception of

instructors' role of direct instruction in distance courses ( $r=.64$  for satisfaction and  $r = .61$  for reported learning).

According to Shea, Fredericksen, Pickett and Pelz (2003), the results had a significant role in the process of faculty preparation and professional development. This study also revealed the strength of the current Community of Inquiry model (instructional design and organization) as well as components that might need improvement, such as discourse facilitation and direct instruction. Based on these findings, the authors revised the teacher training curriculum and created a new five-month faculty development workshop aimed at helping faculty have a better teaching presence in online instruction.

A follow-up investigation (Shea, Pickett & Pelz, 2003) of teaching presence was conducted in order to assess the effect of the five-month faculty development program within the SUNY Learning Network. The same results (85% of students reported agreement with statements) were found for the area of instructional design and organization. However, in the other two areas, some improvements were made. Discourse facilitation was slightly enhanced (75% of students reported agreement with statements), as was direct instruction (78% of students reported agreement with statements). The authors of this study concluded that the results confirmed the validity of the strategies regarding faculty professional development for establishing teaching presence in online courses.

Mandernach, Gonzales and Garrett (2006) regarded instructor presence in threaded discussions to be an important element for the quality of online learning. Initially, these authors conducted a qualitative inquiry in order to examine discussion participation and instructor engagement in threaded discussion. An open-ended

questionnaire aimed at assessing instructor views on online learning, faculty evaluation, and course standards was sent by email to faculty (N=368) involved in distance learning programs in the Midwest. The final sample for the study consisted of 96 online instructors, a 26% response rate. The authors conducted content analysis and the following results were found.

Requirement of participation is an essential element of teaching presence in threaded discussions. The majority of online teachers supported the idea that discussion participation should be regulated by standards and university policy. However, significant disagreement was found regarding the frequency of participation in threaded discussions. As reported by the authors, the minimum requirement should be 3 days/times per week. Furthermore, there was no consistency in responses concerning the official evaluation of the quality of teachers in threaded discussion postings. Finally, Mandernach, Gonzales and Garrett (2006) concluded that for the development of teaching presence in online courses primarily based on threaded discussions, it might be most important to set “professional expectations and communicating concrete strategies for instructors” visibility in the online classroom” (p. 258).

The studies reported in this chapter are selected with the purpose of reflecting the large variety of research methods, issues, and concerns regarding the concept of teaching presence. Many relevant studies (Arbaugh, et al., 2008b; Pawan, et al., 2003; etc.) were beyond this brief literature review. However, no study could embrace the entire body of relevant research. Also, numerous open questions still wait to be answered by further research. In the following section the impact of teaching presence on students’ engagement and course performance will be addressed. Based on the concepts and

research findings discussed in this study, a possible model that explains the link between teaching presence, student engagement, and student performance will be outlined.

### **Teaching Presence Implications for Community of Learners**

Even a brief literature review indicates that teaching presence plays an important role in instruction regardless of the type of educational environment. Due to the nature of online learning (i.e., the physical absence of the instructor), issues related to teaching presence in online instruction are significantly more important for learning success, which has been stressed in a variety of research in this area. Therefore, this section is aimed at highlighting some of the impacts of teaching presence on student engagement in course activities and student performance.

#### **Teaching Presence Implications: Engagement and Performance**

Establishing teaching presence is a crucial element for building an online Community of Inquiry. In Garrison, Anderson and Archer's (2000) view, teaching presence "support[s] and enhance[s] social and cognitive presence for the purpose of realizing educational outcomes" (p. 90). As expected, by developing teaching presence, online instructors strive to promote student perceptions of social and cognitive presence. A growing body of evidence indicates that if instructors manage to develop and sustain a high level of social and cognitive presence, it will consequently lead to learning success in distance courses. In this particular study, two indicators were used for measuring the level of student learning success. The first indicator was student engagement in course activities, while the second indicator was student performance in online courses.

**Student engagement.** The level of student engagement in online course activities depends on many different factors. Educational context, student personality, interest in



course subject, level of motivation, social stimulation, satisfaction, social presence, course design, and many other elements may be significant determinants of student engagement in course activities.

Teaching presence is just one of the determinants that can affect student engagement. Even though teaching presence is one of many determinants, it is significantly more important because it has a strong influence on all other relevant factors (motivation, social presence, satisfaction, course design, etc.) of student engagement. Thus, teaching presence can impact the level of student engagement directly and/or indirectly by enhancing other relevant factors of learning engagement, such as motivation, satisfaction, interest in course subject, and social presence. Recently, findings from many different studies suggest an interconnection between these important elements of online learning.

For example, Swan and Richardson (2003) found that social presence was a strong predictor of student satisfaction in text-based online instruction. Other studies also indicate that social presence is related to student satisfaction, motivation, and course engagement (Bai, 2003; Núñez, 2005; Polhemus, Shih, Swan, & Richardson, 2000). Furthermore, it is suggested (Miller, Rainer & Corley, 2003) that the relationship between student satisfaction and course engagement still needs further exploration. Thus, a high level of teaching presence contributes to student perception of social presence (Garrison, Anderson and Archer, 2000), which in turn has a positive impact on overall satisfaction, motivation, and consequently on student engagement in course activities.

Similarly, Swan and Shin (2005) conducted research aimed at assessing the relationship between perceptions of social presence on one hand, and between perceived

learning activities and course satisfaction on the other. Their findings clearly indicate significant positive relationships between these variables. In addition, the authors paid attention to the importance of teaching presence in developing the social aspect of learning communities.

Furthermore, recent studies indicate that teaching presence directly contributes to student engagement in coursework. For instance, Conrad (2002) reported that learners become engaged with the course as soon as they make first contact with the materials or website: “Upon their entry to the course site, most learners want to witness the instructor’s presence via an informative welcome posting. They appreciate a noting of humanness of instructors” through the tone of instructors message” (p.223). In the current research, an attempt was made to reinforce student perception of teaching presence by utilizing a video introductory message instead of a typical text-based introduction.

As discussed in Anderson, Rourke, Garrison and Archer (2001), facilitating discourse as one of the three components of the concept of teaching presence is crucial for maintaining the interest, motivation, and engagement of students in active learning. According to these authors, the teacher is responsible for supporting, participating, and encouraging student responses and promoting coursework activities within the online learning environment. The role of teaching presence in engaging students in active coursework and learning has also been pointed out by Murphy, Smith, and Stacey (2002). Finally, it is worth mentioning that in a recent study conducted by Bedi (2008), interesting findings emerged regarding the relationship between teaching presence and student engagement. This author found that online instructors develop teaching presence

mostly through informative postings, which have a positive impact on student engagement in online coursework.

**Student performance.** The role of teaching presence is not just relevant for enhancing student engagement, but also has a profound impact on student performance. Numerous studies (Belfer & Morgan, 2005; Brady & Bedient, 2003) have indicated the existence of a relationship between teaching presence and learning outcome. For instance, Garrison, Anderson and Archer (2001) considered the teaching presence component to be “essential in moving the process to more-advanced stages of critical thinking and cognitive development” (p. 10). These authors also emphasized that the successful integration of new education content “requires active teaching presence to diagnose misconceptions, to provide probing questions, comments, and additional information in an effort to ensure continuing development and to model the critical thinking process” (p. 10).

Based on the critical thinking and practical inquiry theoretical framework, Anderson, Rourke, Garrison and Archer (2001) emphasized that teaching presence has an explicit role in the facilitation of course activities and that the instructor plays a major role in guiding online students toward higher levels of learning and understanding of the educational content. Teaching presence helps to develop learning and sustain dynamic interaction with content that focuses student attention on the most relevant issues for understanding the essence of the learning concept.

In Mandernach, Gonzales and Garrett’s (2006) view, online course instructors “have a responsibility for setting the tone and climate of the overall learning environment through their engagement in the course. The active participation of online instructors

fosters student participation which, in turn, enhances and motivates student learning” (p. 250). These authors argue that instructors’ active participation in a variety of course activities, especially in threaded discussions, significantly increases teaching presence in online courses, which has a positive impact on student learning and overall satisfaction.

Finally, LaPointe (2003) conducted an interesting study aimed at explaining the relationships between five constructs: individual learning characteristics, teaching style, task design, course requirements, and prior student experience regarding computer mediated communication (CMC). In this study, teaching style refers to the teaching presence proposed by Anderson, Rourke, Garrison, and Archer (2001). Teaching style was measured using three teaching presence indicators: course design, facilitation and discussion, and direction of instruction. By using structural equation modeling, this author found that teaching style (teaching presence), prior CMC experience, and student interaction accounted for 65% of the variance in student learning outcome and course performance. It was also found that student learning activities included the affective and cognitive components. This author concluded that the “strong correlation between learning and satisfaction suggest that cognitive dimension of learning cannot be separated from its affective dimension” (LaPointe, 2003, p. 4).

Taking into account the studies presented above, an accumulated knowledge base supports the idea that teaching presence is a relevant determinant of student engagement and student performance. Furthermore, by supporting and enhancing social and cognitive presence, teaching presence indirectly affects student engagement and course performance. Also, it must be pointed out that teaching presence contributes to overall

student satisfaction and motivation, which has positive impacts on student engagement and perceived learning as well.

Although this literature review provides evidence-based explanations for the significant role of teaching presence in online instruction, many questions remain unanswered. The main question this research is focused on is related to possible ways of enhancing student perception of teaching presence in online courses. Considering that the Community of Inquiry model and the concept of teaching presence was developed to assess crucial prerequisites for a successful learning experience within a text-based online environment (Garrison, Anderson & Archer, 2000), it is reasonable to ask the following question: How will utilizing a different delivery media, such as asynchronous video in a primarily text-based environment, impact teaching presence? Due to the nature of online learning (i.e., the physical absence of the instructor), questions regarding delivery method as a way to enhance teaching presence seem relevant. Student perceptions of the primarily text-based learning process and overall learning experience may be entirely different from student perceptions of learning that is supported by media providing visual and audio input, such as asynchronous video. The following section provides a review of studies focused on the instructional value of video in online learning environments.

### **Instructional Value of Asynchronous Video**

By its nature, learning is a social phenomenon (; Bandura, 1971; Vygotsky, 1962). In the traditional teaching setting, an instructor is physically present in the classroom and guides the learning process by providing audio, visual, and non-verbal input such as facial expressions and gestures. According to numerous studies (Liu & Ginther, 1999; Sankey, 2003; Taylor, 2005), one learns by receiving information from the outside world

through several different channels such as audio, visual, and kinetics. Undoubtedly, these integral elements of the traditional educational process are beyond the scope of the learning experience of the majority of online students enrolled in text-based courses. A low level of motivation, poor learning performance, anxiety, and alienation are just some of the serious issues that online instructors deal with. Also, the instructor's physical absence from an online course may be considered a major determinant of student perception of teaching presence. This is especially true for courses that are primarily text-based. Students who face large amounts of text-based documents during their coursework without the possibility of seeing or hearing their instructor typically encounter more constraints than students in a face-to-face learning environment.

Limitations regarding text-based learning environments are even pointed out by proponents (Anderson, Rourke, Garrison & Archer, 2001) of the teaching presence concept. "Part of the challenge," these authors argue, "is to develop compensatory behavior for the lack of non-verbal and paralinguistic communication in a text-based medium" (p. 14). These authors accepted the Marshal McLuhan postulate that "the medium is the message" and that in comparison to traditional learning and learning supported by video or audio, text-based learning environments significantly reduce the amount of body language and voice. Rice, Hiltz and Spencer (2005) also noticed that "text-based communication may not create an optimal learning environment for some learners, given that learners have different learning styles and preferences in terms of type of medium of information (p. 227). The authors argue that combining one or more media with text-based documents may lead to a better learning outcome.

Due to the rapid development of the Web and instructional technology in the previous decade, a variety of instructional tools is now available for implementation in text-based environment. Asynchronous video is one of the instructional media that provides the opportunity for online teachers to deliver educational content through visual (motion) and auditory channels. Instructional video material provides students with verbal and non-verbal cues that could be found in traditional face-to-face environments. Therefore, multiple modes of information delivery may help students to see and hear the instructor and to make the online course a more natural learning environment. Schlosser and Burmeister (2006) pointed out that “humans enjoy the sound of the human voice. Hearing an individual’s voice adds another dimension to an online identity” (p. 2). As noted, such a learning environment has a different dimension where students may indeed sense teaching presence.

There is a rich body of literature that indicates the instructional value of asynchronous video in learning. In Rice, Hiltz and Spencer’s (2005) view, video as a medium has significant advantages: it enriches audiovisual content, enhances average lesson quality, and permits access by multiple learners over multiple periods of time. Other authors, such as Goldman, Crosby, Swan and Shea (2005), indicate that video technology will have a strong impact on online learning in the future. By using video technology, online instructors are able to demonstrate moving events and add personalized input to the discussion. However, the utilization of video technology strongly depends on technological infrastructure and bandwidth. As discussed by Moore and Kearsley (2005), video is “a powerful medium for capturing and holding attention and for conveying impressions” (p. 77). Summarizing the findings of relevant studies

regarding video, the authors pointed out that instructional video is especially effective in developing attitudinal and emotional aspects of learning. They also pointed out that video recordings provide dynamic and vicarious learning experiences. The instructional role of video in developing the emotional aspects of learning may be supported by other studies as well. For example, as discussed by Campbell and Cleveland (2005), recent findings in the area of brain science research indicate that emotion has a significant impact on learning processes and outcomes. Based on study findings, these authors concluded that “it seems reasonable to suggest that learner’s ability to construct and confirm meaning, and indeed engage in reflection and discourse, may be enabled or constrained by emotion” (p. 4). It is interesting that Campbell and Cleveland argue for the revision of the Community of Inquiry model. In their view, the Community of Inquiry model should integrate an additional fourth component along with social, cognitive, and teaching presence: emotional presence.

The instructional implications of using video in online and distance teaching have been reported in many studies. For example, the purpose of a recent study conducted by Griffiths and Graham (2009) was to show the impact of personalized asynchronous video communication between students and the instructor on learning motivation, instructor immediacy level, and social presence within online courses. Video clips of instructors lecturing were included in the regular online course. Additional video clips of messages of encouragement, reminders, and announcements were sent to the students. Furthermore, the intervention included asynchronous video-based communication between the students and the instructor. Students were required to record their responses on assignments using a webcam and send it to their instructor. The instructor responded



in the same manner, recording personalized video feedback to be sent to students. The overall results indicated that students' ratings of this instructional approach were very positive in comparison to other classes (online courses without video and face-to-face courses). Student responses also indicated a higher level of instructor immediacy level, social presence, and learning motivation. Students developed more personalized relationships with their instructors. Many students reported that they enjoyed class activities supported by asynchronous video clips more. Instructors' impressions regarding the use of asynchronous video were that student video responses showed significantly better understanding of the topic, contained more information, and were more accurate than responses provided in written form. Based on the results, Griffiths and Graham (2009) concluded that "asynchronous video communication may well be a technological method that can bridge the gap between the worlds of online and face-to-face education, and gain the best from both worlds" (p. 74)

In other studies (e.g., LaRose & Whitten, 2000), researchers tried to compare different educational settings that emphasized the use of three different educational media: text-based delivery of educational content, audio, and video. It was found that instructors who incorporated asynchronous video in lecturing used immediacy behaviors such as non-verbal cues, gestures, smiles, a relaxed posture, etc. Increasing teachers' immediacy and creating an online environment in a way that will interact with students' humane side and personality seems to be difficult to achieve in a text-based online course. In some related studies it was also found that students reacted emotionally to utilizing video in online instruction (Whipp & Lorentz, 2009).

It is interesting that Swan (2003) made the connection between teacher immediacy and teaching presence. This author stated that “teachers” verbal immediacy behaviors (i.e., giving praise, soliciting viewpoints, humor, self-disclosure) and their non-verbal immediacy behaviors (i.e., physical proximity, touch, eye-contact, facial expressions, gestures) can lessen the psychological distance between teachers and their students, leading (directly or indirectly, depending on the study) to greater learning” (p. 11). According to this author, the integration of text, audio, and video instructional material could be beneficial from the aspect of interaction and learning. In the same vein, Arbaugh and Hwang (2005) commented that audio and video mini-lectures, as well as guidelines on how to use the medium effectively, may contribute to the development of teaching presence.

Another example of the instructional value of video can be found in a study conducted by Motteram and Forrester (2005). This qualitative study aimed to assess several aspects of students’ online learning experiences at Manchester University (UK). One research goal was to examine the human element and role of the tutor in online courses. Students were encouraged to use all available instructional media as well as pre-recorded video clips that were available online. Qualitative findings revealed that “the use of video [was] well received by distance students who consider it brings a more human or face-toface (sic) element into the programme” (Motteram & Forrester 2005, p. 285). According to Motteram and Forrester (2005), although instructional video did not provide enough presence in instruction, it may have “facilitated the distance void between tutors and peers” (p. 285). In conclusion, they stated that the study provides a deeper understanding of students’ educational needs in an online course and that

instructors should maximize technology use in order to enhance the learning process. A similar conclusion was made by a group of researchers (Enbody & Severance, 1989) who conducted an entire project regarding the implementation of video technology at Michigan State University (USA). Their main intent was to add a human dimension to distance education by using an instructional video. One of the follow-up conclusions based on their project activities was that online instruction should be delivered through the Web in such a way as to simulate a traditional, face-to-face learning environment.

It is interesting to note that a literature search (Database: Academic Search premier, PsycINFO, Primary Search, Business Source Premier and PsycARTICLES, 1991-2008) failed to disclose research conducted in order to provide measurable evidence that introductory videos (videos that provide organizational information to students) in text-based online courses have an impact on the level of teaching presence. However, a comprehensive Web search revealed two studies relatively similar to this research. Jones, Naugle and Kollof (2008a) used the Community of Inquiry model as a framework for conducting research that aimed to assess the impact of introductory videos on teaching presence in hybrid and online courses. As stated by the authors, the purpose of the study was to compare student perceptions of the implementation of introductory videos in a hybrid course and a fully online course. The following research questions were proposed: “Are streamed introductory videos useful to students in establishing instructor’s presence in a hybrid course? Are such videos useful to students in establishing instructor's presence in an online course? How do the students' perceptions compare between the two modes of delivery?” (p. 3).

The authors developed two introductory videos accompanied by transcripts. One video was implemented in an online course, while the other was used in a hybrid course. The purpose and structure of both introductory videos were similar. As discussed by Jones, Naugle and Kollof (2008a), the purpose of the video was to introduce the instructors and each of their courses. Both videos provided information regarding course management issues, instructor expectations, and course requirements. In essence, these videos provided general information about the course and the instructors. The videos were presented to students at the very beginning of the course.

Participants in the study were 55 students from a hybrid course and 37 students from an online course. All participants were graduate students. The study was quantitative in nature and used a teaching presence survey with open-ended questions regarding delivery method and teaching presence. Additional survey questions aimed to assess student satisfaction with online video, the impact of video on learning experience, and student preferences for different instructional materials.

According to Jones, Naugle and Kollof (2008a), the overall results indicated that the introductory video could help the process of establishing teaching presence in both hybrid and fully online instructional environments. Students in both courses gave high ratings to the instructional value of the introductory video and the “opportunity to *get to know the instructor* before the beginning of class” (p. 7). Furthermore, these three authors pointed out that “students appreciate[d] having the opportunity to meet the instructor *virtually* using introductory videos before the course [began]... The students stated their preference was to have a sense of learning from a real person (when receiving

instruction via the course site) and not just from text-based instruction” (p. 7). Students in the hybrid course reported (65%) that the introductory video helped them to prepare for the course, while students in the fully online course had significantly more of the same impression (81%) about the introductory video.

However, some differences between student responses in the hybrid and fully online groups were found. For example, students in the hybrid course had greater preferences for narrated Power Point slide presentations as a way of delivering educational content, while the online student group expressed greater preference for asynchronous video and text-based learning material.

Jones, Naugle and Kollof (2008a) concluded that there are many challenges regarding the development of teaching presence in online courses and emphasized that this process is especially demanding in primarily text-based online environments. Finally, this trio summarized their research with the following sentence: “from the student’s perspective, the value is having the instructor be seen, heard, and, at the same time, „experienced“ by the students” (p. 10).

In the second study focused on the same issue, Jones, Kolloff, and Kolloff (2008b) come up with similar findings. For instance, the research revealed that the video is not just important for enhancing the level of teaching presence, but that it also plays an important role in establishing teacher immediacy in online instruction.

Finally, this review would not be complete without providing basic information regarding the technical aspects and production of asynchronous instructional videos. According to Simonson, Smaldino, Albright, and Zvacek (2009), the most popular video

file types are Apple Quick Time (.mov), Microsoft Windows Media Player (.avi), and RealPlayer (.rm). Currently, RealPlayer format of video files is one of the most commonly used in distance courses. The authors pointed out that instructors and instructional designers mainly used video streaming to deliver video files to students. Video streaming can be defined as the progressive downloading of video files. Along with streaming videos, instructors also distributed the video file to distance students on CDs and DVDs. More about video technologies and technical issues regarding the production of asynchronous instructional videos can be found in the ever-growing body of literature (Lever-Duffy, McDonald & Mizell, 2005; O'Bannon & Puckett, 2007; Smaldino, Russell, Heinich & Molenda, 2005) in the area of instructional technology.

In summary, as presented above, there are many links between the implementation of asynchronous video in online instruction and student perceptions of teaching presence. In comparison to text-based learning environments, asynchronous video provides additional dimensions of learning for online students. Asynchronous video as a medium has capabilities to deliver visual (motion) and audio messages to students and to some degree compensate for the instructor's physical absence in online courses. The possibility of hearing and seeing the instructor is a missing part of the learning experience of online students. Perhaps the best way to conclude this discussion regarding the instructional value of video in the development of teaching presence is to reference the comments of Cleveland-Innes, Garrison, and Kinsell (2009): "Teaching presence must recognize and utilize the unique features of the medium and structure and model appropriate learning activities" (p. 4).

## **Relevant Questions Concerning Video, Teaching Presence, Student Engagement and Performance**

At first glance it seems that the link between instructional asynchronous videos, teaching presence in online courses, student engagement in class activities, and student performance is not difficult to grasp. As explained in the previous sections, research has indicated the existence of relationships between these elements of online instruction. However, research is an endless process and implies permanent exploration and discovery of new information. The previously discussed research regarding video, teaching presence, student engagement, and student performance provides not only scientific evidence that may be helpful for better understanding instructional dilemmas in this area, but also opens many other questions for further investigation. This study is aimed at providing some of the remaining answers concerning the implementation of introductory videos in online instruction and the impact of teaching presence on student engagement and performance.

By conducting the educational intervention, my intent as a researcher is to accomplish one of the most general goals; that is, improving the student learning process in distance courses. This demanding task requires serious questioning of the results obtained in previous studies and the proposal of new directions based on already existing knowledge. Therefore, *the research grand design* or main research standpoint relies on the assumptions that are built on the results of the research discussed in the previous sections. The following two assumptions regarding the research issue were made: that asynchronous video will contribute to the development of teaching presence, and that teaching presence will influence student engagement and course performance.

First, there are many challenges and issues related to the process of enhancing teaching presence by implementing asynchronous videos in online courses. For example, the following questions may be proposed: What is the unique feature of video as a delivery medium that affects the level of teaching presence? How do students from different cultural backgrounds perceive instructor body language and non-verbal expression? What type of narration (formal or informal) will contribute more to the establishment of teaching presence? What is the most appropriate pace of instructor narration? How does the video announcement structure help students perceive teaching presence? What kind of information should be delivered in weekly video announcements? Should video announcements be accompanied by transcripts? What is the optimal length of the introductory video?

Second, taking into consideration the results of previous studies, I hypothesized that the educational intervention (the use of video announcements) will enhance students' perception of teaching presence. An enhanced teaching presence will then have a positive effect (impact) on student engagement and performance, and ultimately move the learning process to a higher level. In other words, a higher perception of teaching presence leads to better student engagement in activities and higher student performance, which improves overall learning outcomes in distance courses.

Therefore, it could be proposed the *Teaching Presence, Engagement and Performance Model (TPEP)* that should outline and explain the connection between teaching presence, student engagement, and student performance. More specifically, the extent to which teaching presence influences student engagement and student performance will be determined. Also, within the proposed model I will measure the



interrelationship between student engagement and student performance. This model includes the following constructs as presented in the figure No. 2.2.

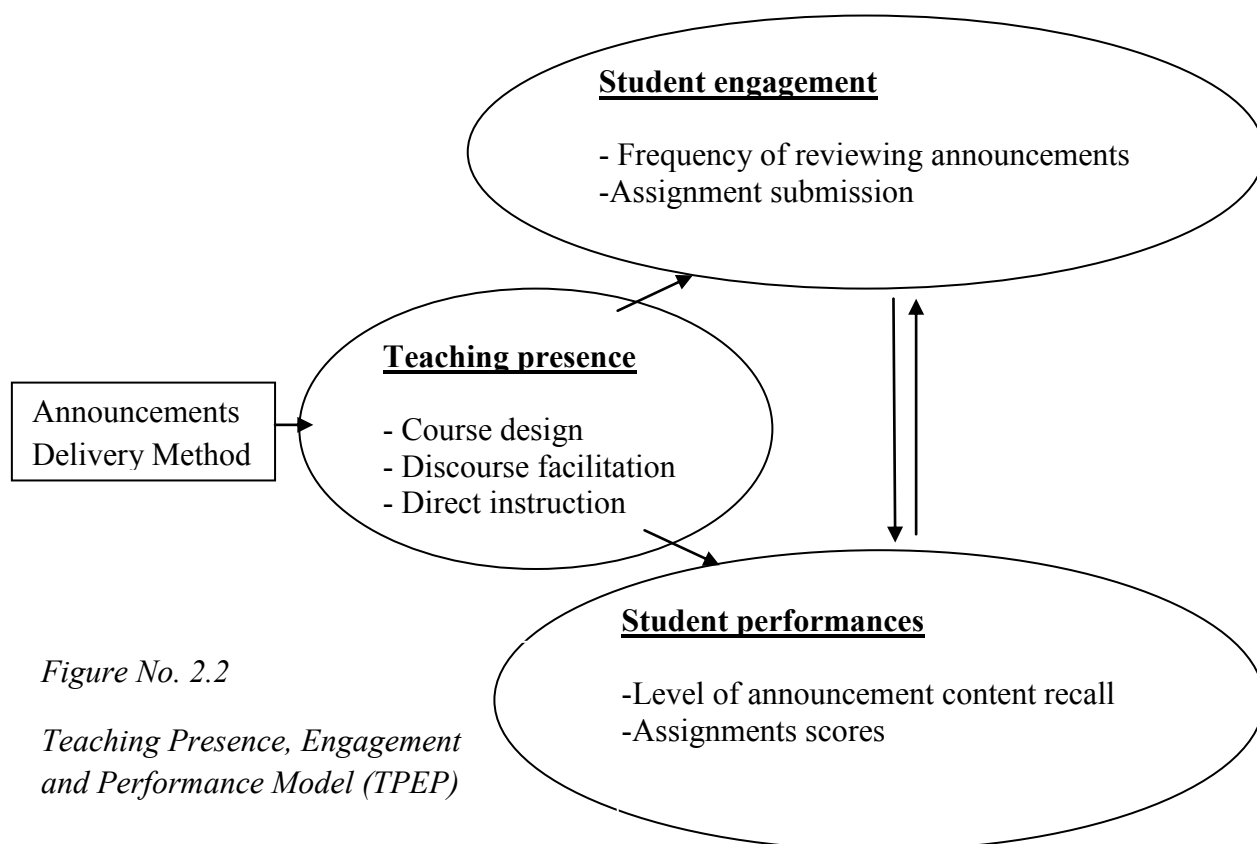


Figure No. 2.2

*Teaching Presence, Engagement and Performance Model (TPEP)*

Each of the three constructs within the model has specific indicators or construct components. As defined by Anderson, Rourke, Garrison and Archer (2001), teaching presence consists of a) course design, b) discourse facilitation, and c) direct instruction. I defined the other two constructs in the methods section. Indicators of student engagement are: a) frequency of reviewing announcements and b) length between the date of reviewing the introductory message and the date of assignment submission. Finally, the third construct labeled student performance includes the following two

elements: a) level of announcement content recall, and b) assignment scores. Perhaps the most challenging part of this study was the search for interrelationships between the outlined model constructs and their indicators.

## CHAPTER 3: RESEARCH METHOD

The research method section provides an overview of the strategies, techniques, and procedures used in data collection, data analysis, and report of findings. A detailed description of the research method contributes to accuracy in collecting and analyzing the data. This section also helps me make conclusive statements about research findings by minimizing the level of bias. In addition, it points out the link between the purpose of the study and the practical methodological issues of collection and data analysis (Paul, 2004). This chapter focuses on how this study has been conducted and provides answers to main questions such as: What was the purpose and hypothesis of the study? How was the data collected? How was the data analyzed? Specifically, this section discusses the following elements of research methodology:

- |  |   |
|--|---|
| a) Purpose of study;                               | f) Research instruments;                            |
| b) Research questions;                             | g) Sampling procedures;                             |
| c) Research hypothesis;                            | h) Data collection procedures;                      |
| d) Research design and intervention<br>procedures; | i) Data analysis procedures; and                    |
| e) Dependent and independent variables;            | j) Ethical issues with emphasis on IRB<br>approval. |

### Purpose of Study

The purpose of this study is to explore the role of asynchronous video in developing teaching presence. Specifically, **the study addresses whether or not the implementation of a short asynchronous introductory video in a primarily text-based online course has a**

**positive role in the development of students' perception of teaching presence.** The purpose of this study requires a sequential explanatory mixed methods research design.

### **Research Questions**

The focus of this study leads to the following research questions.

- a) To what extent does the introductory announcement delivery method affect teaching presence in primarily text-based online courses supported by LMS Blackboard?
- b) Is there a difference in student course engagement between students who view introductory units or modules delivered as text and students who view them as asynchronous video?
- c) Is there a difference in student performance between students in online courses where introductory units are delivered in textual format and students in online courses where it is delivered via asynchronous video messages?
- d) Is there a difference in the interrelationships between teaching presence, student course engagement and student performances in the control and experimental groups of students?
- e) How does a change in delivery method contribute to the changes in students' perception of teaching presence, performance, and course engagement?

### **Quantitative Research Hypothesis**

#### *Null Hypothesis 1*

There will be no significant differences in the perceived level of teaching presence between groups of students who received weekly video introductory and students who were introduced to weekly coursework activities via textual announcements.

*Prediction:*

Students assigned to the introductory video study group (experimental group) will score higher on the teaching presence part of the Community of Inquiry survey.

*Null Hypothesis 2*

There will be no significant differences in the frequency of reviewing the introductory messages and assignment submission dates between students in the experimental and control groups.

*Prediction:*

Students assigned to the introductory video study group will have a lower frequency of reviewing the introductory messages and a shorter time of assignment submission than students assigned to the group in which announcements are delivered in textual format.

*Null Hypothesis 3*

There will be no significant differences in the level of recall of the announcement content and the final course scores between students in the experimental and control groups.

*Prediction:*

Students assigned to the introductory video study group will score higher on the set of questions aimed to assess the level of recall of the announcement content, and higher overall assignment scores at the end of semester.

## **Research Design and Intervention Procedures**

### **Research Design**

A sequential explanatory mixed methods design was used, which involves collecting qualitative data after a quantitative phase to explain or follow up on the quantitative data in more depth (Creswell & Plano Clark, 2007). The study also integrated elements of the experimental

method as part of the educational intervention phase within the sequential explanatory mixed methods research design.

In addition, the study utilized a research design known as the *posttest only control group design*. This type of research design implies comparisons between an experimental and a control group after an educational intervention. At the end of the intervention, both groups were given the same posttest to measure the effect on the research dependent variables. According to some authors (Campbell & Stanley, 1966; Jeffrey, Gliner & Morgan, 2000), the pivotal point in this type of research design is randomization. In Jeffrey, Gliner and Morgan's view (2000), if the researcher randomly assigns participants to control and experimental groups, these two groups should be equivalent prior to the intervention. Therefore, if there are differences in the measurements related to the dependent variables, "it can be assumed that differences result from the intervention and not from differences in participant characteristics" (p. 103). It is worth pointing out that equivalence of student characteristics between both groups is a crucial element that affects the internal validity of the data.

The data collection in the study was conducted in two phases.

**Quantitative phase.** In the first phase of the study, two different instruments were used to obtain quantitative data about the results of the educational intervention. To measure students' perception of teaching presence, I used the *Teaching Presence Survey*, one of the three subscales of the *Community of Inquiry Survey*. The level of students' recall of the content of the introductory message was assessed by a questionnaire I developed. This questionnaire was titled *Assignment Content Recall Questionnaire* (ACRQ). Frequency of reviewing announcement, length of time between reviewing announcement and assignment submission, and students'

course were gathered from the Blackboard server and recorded in specifically designed protocols.

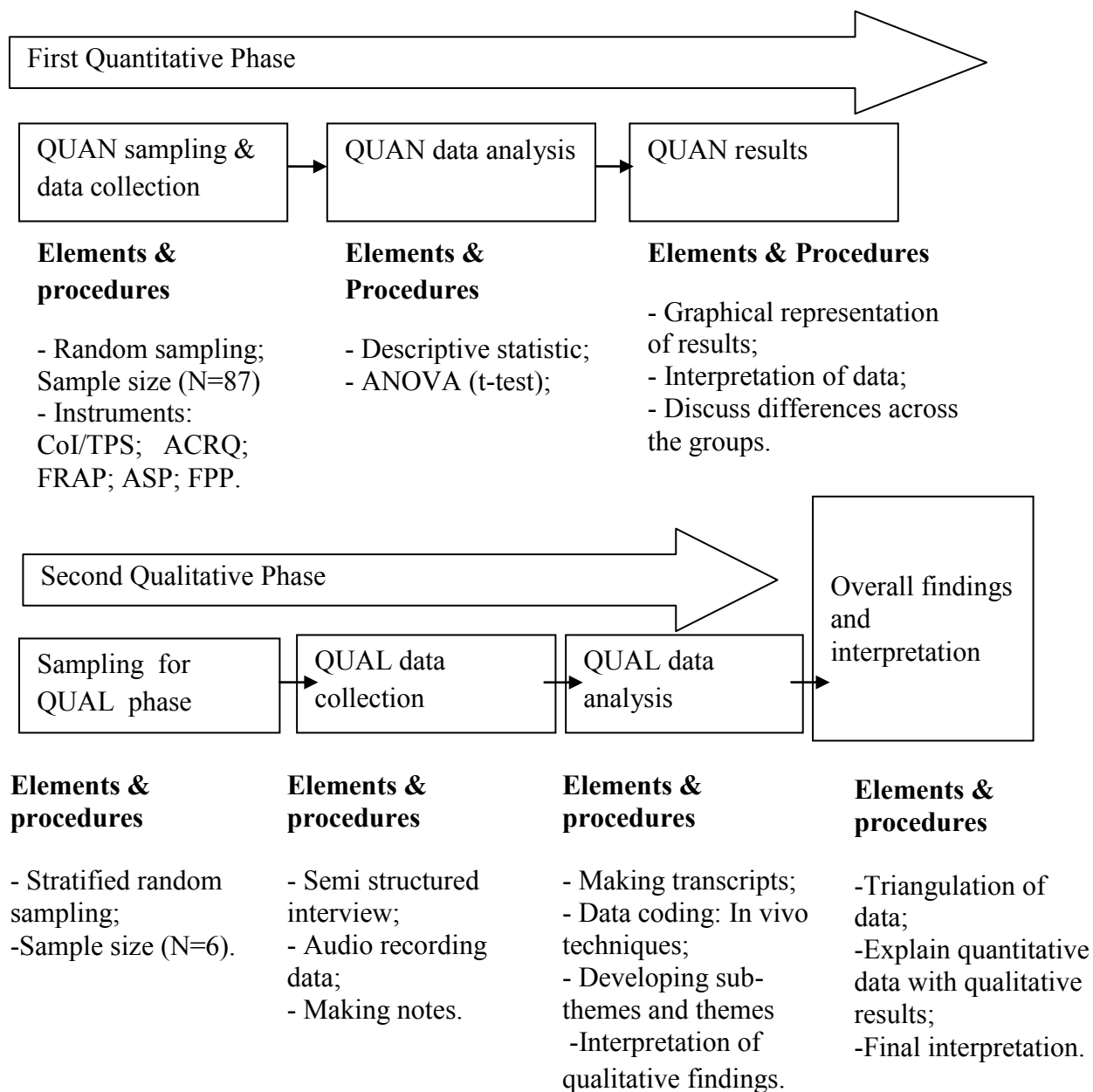
The quantitative data were collected from students who attended a primarily text-based online course (Insect Biology: ENTO115) at UNL to test the concept of teaching presence as part of the Community of Inquiry theoretical model. This phase of research explained how the use of asynchronous introductory videos relates to student perceptions of teaching presence within an online course. Therefore, the results of the educational intervention were measured with the quantitative instruments in the first phase. Thus, by utilizing elements of experimental methods, my intent was to determine if asynchronous introductory videos (independent variable) influenced another dependent variable to change (i.e., student perception of teaching presence). However, the level of control within an experimental environment of an online course can be debatable (Cohen, Manion & Morrison, 2007). Therefore, in this research design, all relevant factors that might impact the treatment may not be under rigorous control; this is a limitation of this particular study. However, in order to preserve the normal distribution of participants' traits, a random sampling method was utilized in the quantitative phase of the research.

**Qualitative phase.** The second qualitative phase was conducted because qualitative findings could provide additional information about students' emotional and personal reactions to the asynchronous video delivery method. In this exploratory follow-up, student perception of teaching presence was tentatively explored with undergraduate students who were selected through stratified random sampling. The research was conducted with UNL as the research site. The reason for the exploratory follow-up was to help explain quantitative findings. It was

assumed that quantitative findings were not sufficient to provide deeper insight into the overall results of the study. Graphical model of the research design is presented in Figure No. 3.1.

*Figure No. 3.1*

*Two Phase Research Design Model*





## **Intervention Procedures**

The basic intent of the current research was a comparison of two instructional strategies within an existing online course delivered by LMS Blackboard at the University of Nebraska-Lincoln. The target course for the implementation of this educational intervention was Insect Biology (ENTO115). Insect Biology (ENTO115) is a well-organized online course that primarily utilizes text-based instructional materials. The course syllabus is provided in Appendix I. Insect Biology course has several lessons within six modules. Typically, the instructor for this course posts weekly announcements in textual format in order to inform students about course activities and assignments for the particular week. There is an assignment for each week that students need to accomplish and at the end of the course there is a final test that is administrated in traditional fashion by using paper and pencil.

The educational intervention consisted of changing the delivery method for weekly announcements. The experimental group received the weekly announcement in an asynchronous video delivery format, while the control group was introduced to weekly course activities via text-based announcements. The content of the announcement remained the same regardless of the delivery mode.

The weekly announcements provided exclusively organizational information and words of encouragement and support to students. The announcements did not convey any clarification or additional explanation of the educational concepts discussed in the course. Each weekly announcement had the following five components:

- a) Basic information such as the instructional goal for the weekly activities and/or assignment due dates;
- b) Brief description of the topic and assignments;
- c) Instruction about what students should do over the week;
- d) What is coming up next week;

- e) Words of encouragement and support (“look forward to seeing you online”, or “let me know if there is any way I can help you,” etc.)

Several distinctive phases could be recognized in the process of designing and implementing the above-outlined educational intervention. More specifically, the educational intervention involved the following five phases:

*The first phase* referred to the activities related to adjusting the features and settings on LMS Blackboard in order to support random student enrollment. The Insect Biology (ENTO115) course was divided into two groups of online students who were randomly enrolled in the control and experimental groups. An equal number of students were initially enrolled in both groups.

*The second phase* referred to the process of developing the introductory video clips. Taking into account that the intervention was conducted over a one semester period, it was necessary to develop a set of fifteen introductory videos. Video clips were between 1-3 minutes long and were in Quick Time format. All videos were filmed in the Instructional Design Center at UNL using a professional Cannon camera. Footage was edited with iMovie. Video clips had a high quality of sound without background noise that might cause auditory fatigue and auditory split attention effect. At the end of this phase, I uploaded textual and video announcements on the UNL Blackboard System. Textual announcements were available to students in the control group, while introductory video clips were accessible only to students in the experimental group.

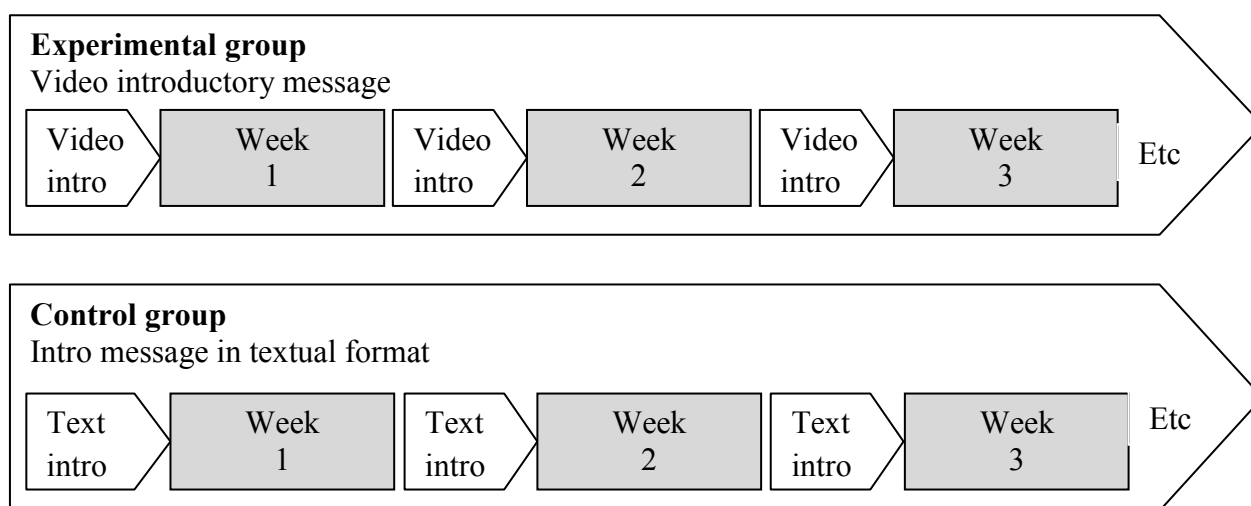
*The third phase* of the research was to gain permission from students to be a part of the study. Students were informed about the basic features of the research and asked for permission (Appendix H).

*The fourth phase* was the intervention. Students assigned to the course with text-based announcements were treated as the control group, while students assigned to the course with introductory videos were considered the experimental group. Participants accessed the course

and started to work on the units according to their syllabus time schedule. Each Monday, the course instructor posted an announcement about course activities for the particular week. It is important to point out that the experimental and control groups received exactly the same content in these announcements. The only difference was in the announcement delivery format. The course structure, lessons, activities, and assignments were also the same for both groups. In addition, students from the control group were not able to access or be exposed to any coursework activities or announcements of the experimental group and vice versa. The intervention lasted fifteen weeks, from the beginning to the end of the 2010 spring semester. The graphical model of intervention for the first three weeks is presented below (Figure No. 3.2).

*Figure No. 3.2*

*Research Intervention Model*



*The fifth phase* was reserved for administering the surveys and gathering the qualitative data.

## **Independent and Dependent Variables**

This research involved three sets of variables: independent, dependent, and demographic variables used for sample validation. The main independent research variable was *the delivery method* of the introductory weekly announcement. The dependent variables referred to *the level of teaching presence, students' coursework activities and scores, and the level of recall of the content of announcements*. The demographic variables in this study were *students' age and previous online learning experience*.

### **Definition of Variables.**

*Introductory delivery method.* The delivery method is the method through which the online instructor transmits the content of the announcement. In this research two delivery methods were used: asynchronous video and text-based delivery.

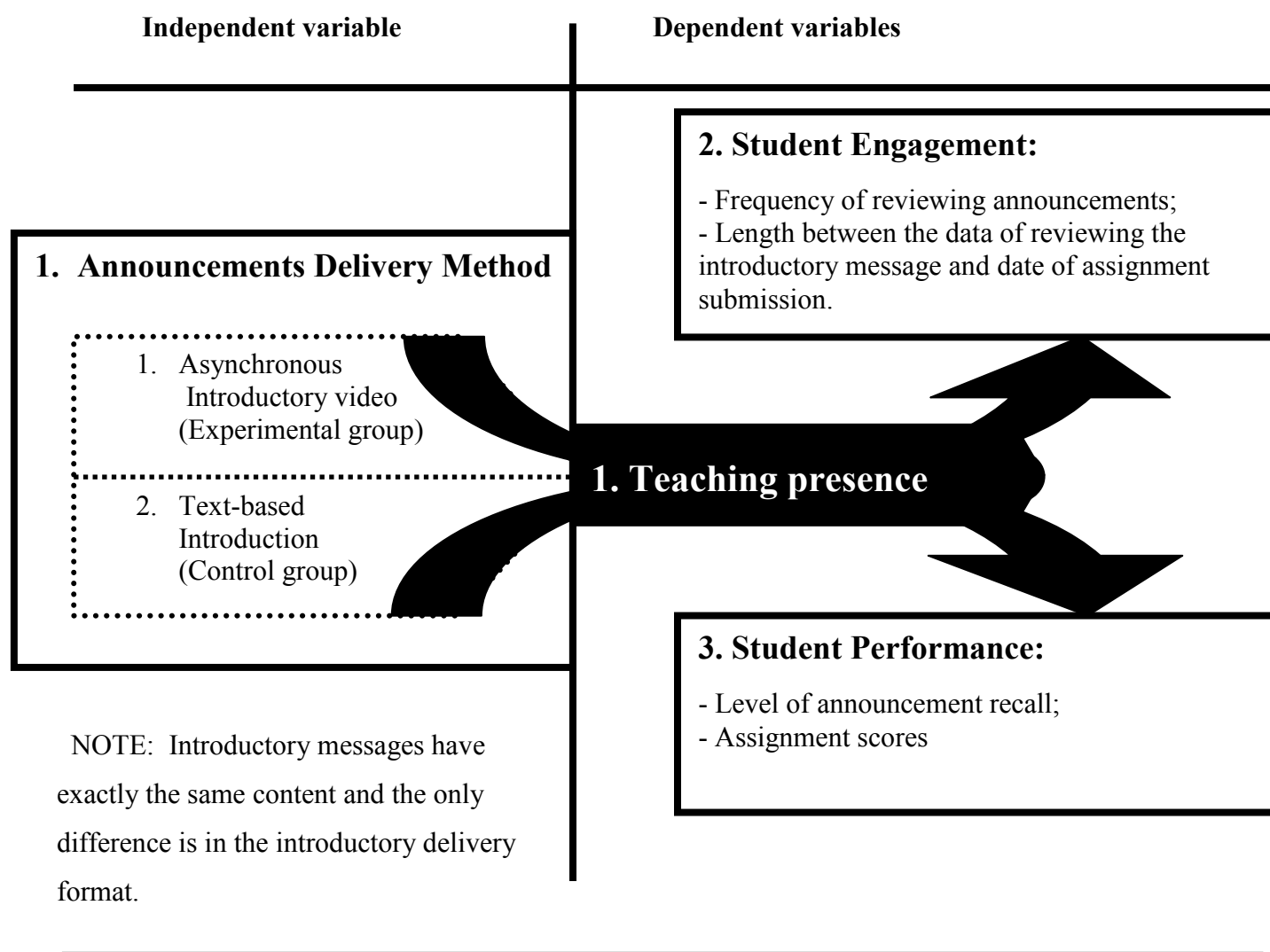
*Level of teaching presence.* Teaching presence refers to the teacher's role in online instruction. In this research study, teaching presence was defined as "the design, facilitation and direction of cognitive and social processes for the purpose of realizing personally meaningful and educationally worthwhile learning outcomes" (Garrison & Anderson, 2003, p. 29). The level of teaching presence was presented as a numerical score; more specifically, as the mean of all items in the Teaching Presence Survey.

*Student engagement in coursework.* Student engagement refers to the amount of invested effort in course activities. Specifically, student engagement was defined as the frequency of reviewing the introductory messages and the length between the date of reviewing the introductory message and the date of assignment submission.

*Student performance.* This variable refers to the amount of information that students were able to recall from the content of the announcement as well as students' course scores at the end of the semester. A graphical model of research variable is given below (Figure No. 3.3)

Figure No. 3.3

Model of Research variable.



## Research Instruments

In order to explore the role of introductory messages in developing the level of teaching presence for online instruction, this study utilized instruments for obtaining both quantitative and qualitative data. The Community of Inquiry Survey was used to obtain quantitative data regarding the level of teaching presence, while the Assignment Content Recall Questionnaire served to gather data regarding students' understanding of the introductory content. Follow up semi-structured interviews were used to provide additional personal observations about the process, which helped me explain the quantitative results. An additional set of questions were used for obtaining basic demographic data about the study participants.

### Quantitative Instruments

**Community of Inquiry Survey (CoI) – Teaching presence subscale.** The Community of Inquiry Survey has been developed and validated by a research team which included the following members: Ben Arbaugh, Marti Cleveland-Innes, Sebastian Diaz, D. Randy Garrison, Phil Ice, Jennifer Richardson, Peter Shea and Karen Swan. CoI survey was used to verify the theoretical concept of the Community of Inquiry model, as proposed by Garrison, Anderson and Archer (2000). It is a self-report instrument designed to assess the existence of the three following essential elements of student success in online instruction: a) teaching presence, b) social presence, and c) cognitive presence. The CoI instrument consists of 34 questions, utilizing a five-point Likert scale, for measuring participants' responses regarding these three sub-concepts. Therefore, the CoI survey is divided into three subscales specifically designed to quantitatively measure teaching, social, and cognitive presence. *For the purpose of this study, only the **CoI-Teaching Presence Subscale (CoI/TPS)** will be used.* The CoI/TPS is provided in the Appendix A.

The CoI/TPS contains 13 Likert-type questions. Questions are given in the form of statements. Thus, participants answer by indicating their level of agreement/disagreement on a five point Likert scale, from strongly agree to strongly disagree. The CoI/TPS is further divided to measure three sub concepts of teaching presence: *a) instructional design, b) facilitating discourse, and c) direct instruction.*

The first four questions refer to instructional design and organization. According to Anderson, Rourke, Garrison and Archer (2001), the sub-concept of instructional design and organization can be described as the planning and design of the structure, process, interaction, and evaluation aspects of the online course. The second six questions reflect the sub-concept of discourse facilitation. Discourse facilitation refers to the means by which students are engaged in course activities based on instructional materials. Finally, the last three questions focused on teachers' direct instruction.

Since this instrument has been used to measure the concept of presence in online learning environments, many different studies have reported high levels of internal validity and reliability across the items. The CoI instrument was tested and statistically validated through factor analytic procedures. Reliability was evaluated using Cronbach's Alpha. Reported measures for Cronbach's Alpha were over .90 for the CoI instrument as a whole as well as for each of the three subscales.

According to Swan, et al. (2008), Cronbach's Alpha yielded internal consistency for the CoI equal to .93, and .94 for the Teaching Presence subscale (0.91 for Social Presence, and 0.95 for Cognitive Presence). Swan, et al. (2008) pointed out that Cronbach's Alpha is used to describe how well each subscale measures a single unidimensional concept. In a study conducted by Shea, Swan, Li and Pickett (2005), Cronbach's Alpha for the CoI/TPS was .97.

Furthermore, this study provided additional data about the level of reliability for the two sub-concepts of Teaching Presence. Cronbach's Alpha for questions related to Instructional Design and Organization was .94 and for Directed Facilitation, it was .97.

Overall, the CoI and its Teaching Presence subscale have been found to be reliable measures of teaching presence in online instruction. In addition to its use in studies conducted by Anderson, et. al (2001), the subscale Teaching Presence has been used in studies conducted by other researchers, such as Arbaugh and Hwang (2005), Belfer and Morgan (2005), etc.

**Announcement Content Recall Questionnaire (ACRQ).** To determine the effect of the delivery method on the level of students' announcement recall, I developed a set of six questions to collect data from the participants of this study. The questionnaire is aimed at measuring whether the introductory delivery method (asynchronous video and text) would help students remember and recall the announcement content. The announcement content provided exclusively organizational information and basic facts related to assignments (due dates, goals, etc). Responses on the Announcement Content Recall Questionnaire (ACRQ) were measured using questions with multiple choices. Students enrolled in the online course Insect Biology (ENTO115) provided answers by checking the appropriate response box.

In addition, the ACRQ included four items aimed at gathering student demographic data. The purpose of demographic questions is to provide sufficient data for sample validation. Therefore, in this study, the following demographic data was collected: gender, year of study, whether the student was living on/off campus, and previous online learning experience (i.e., the number of online courses previously taken). It took approximately 5 minutes to complete. The ACRQ is provided in Appendix B.

In the process of ACRQ items' validation, I utilized the following two methods:



- a) The content validity method is a qualitative measure of items' validity and is based on expert judgments and logic that is applicable to the target field of research (Sirkin, 2006; Vogt, 2005). According to Carmines and Zeller (1991), "content validity is based on the extent to which a measurement reflects the specific intended domain of content" (p. 20). ACRQ items were given to content experts (i.e., those in the fields of instructional technology, distance education, and biology) involved in this research project for validation. After content validation of ACRQ was completed, the set of six questions could then be used to accurately measure the level of students' assignment recall, (i.e., the content of the introductory message).
- b) The ACRQ has been validated through pilot testing procedures in order to assess the accuracy of instruction for completing the instrument and the clarity of the questionnaire items. Subjects of the pilot testing were 5 graduate students majoring in instructional technology at UNL. All of the participants reported that they understood the questions and did not suggest any changes.

**Frequency of Reviewing Announcement Protocol (FRAP).** In order to collect data on the frequency of students reviewing the announcement messages, a data extraction protocol was used. I purposefully designed this protocol for this study. I gathered information regarding the frequency of students reviewing the announcement messages by using Blackboard statistical tools for tracing students' online course activities. Therefore, the FRAP protocol provides information such as student name, student code, intervention group (control or experimental), and frequency (numerical value) of reviewing the introductory message. The FRAP is provided in Appendix C.

**Assignment Submission Protocol (ASP).** The ASP serves to record the following three types of information:

- a) Date when announcement is posted on Blackboard;
- b) Date when announcement is reviewed by the students for the first time; and
- c) Date of assignment submission.

In addition, the ASP includes information such as: student name, student code, and type of intervention group (experimental or control). Data recorded in the ASP were used for obtaining the amount of time between announcement reviewing and assignment submission. All data were retrieved periodically from the UNL Blackboard server using statistical tools for tracing student's activities (Appendix D).

**Final Points Protocol (FPP).** The FPP served to extract student assignment points from the Blackboard grade book. The FPP provided the following types of information: student name, student code, intervention group (control or experimental), and points for all fifteen assignments. There were fifteen assignments in total and I recorded assignment points in the FPP periodically throughout the semester (Appendix E).

### **Qualitative Instrument**

**Follow-up interview.** For gathering qualitative data, I designed a semi-structured interview protocol that included seven open-ended questions and several probing questions. The purpose of this interview was to obtain qualitative student responses to help me explain the results from the quantitative phase. More specifically, the interview questions were focused on exploring the participants' emotional and personal reactions to the delivery method.

The interview protocol was designed according to the standard structure as discussed by Creswell (1998). The interview starts with a brief introduction (the purpose of the study, etc.)

and an ice-breaker question. Following this was a set of five main and four probing questions. The interview ended with a closing question and a thank you note. The length of the interview was approximately 15 minutes. The interview responses were transcribed and samples of transcripts along with digital records are submitted as a part of this study. The interview protocol is provided in Appendix F.

*Interview validation strategies.* The notion of validity in qualitative research refers to the accuracy of obtained data and research procedures (Winter, 2000). Therefore, the validation of the qualitative instrument was conducted in order to achieve and maintain the internal validity of the interview and obtained data. In this study, I used the following strategies for instrument and data validation:

- a) *The content validity method* was used to assess the validity of the interview instrument. The validity of the instrument is assessed by collecting expert judgments about the quality of the interview items. High item quality implies that the items measure what they claim to.
- b) The qualitative interview protocol was also validated through *pilot testing*. Several graduate students, including experts in the field of instructional technology, were subjects of the pilot testing validation. Participants confirmed that interview protocol questions were clearly stated, meaningful, and accurate enough to capture the essence of the phenomena. The participants also did not have any objections regarding the content of the interview introduction.

## **Population and Sampling Procedure**

### **Population**

The target population in this study was undergraduate students who were enrolled in primarily text-based online courses delivered by LMS Blackboard at UNL. However, due to the study design characteristic and statistical requirements, the target population was limited to

undergraduate students who attended online courses with large enrollments. Seven undergraduate online courses with large enrollments were identified at UNL for the 2010 spring semester. After the preliminary selection of the courses based on criteria regarding large student enrollments and course accessibility, I chose one course whose structure and activities provided the best framework for conducting the study experimental design.

Therefore, the sample for this particular research was drawn from the online course Insect Biology (ENTO 115) offered by the Department of Entomology at the University of Nebraska-Lincoln. This course was the most relevant because of its high number of students, cooperative instructor, and accessibility for the intervention.

### **Quantitative Sampling Procedure**

For the purposes of this study, a random sampling procedure was utilized. Random sampling is classified as a probability sample type. This type of sample is drawn from a population in such a way that each member of the population has an equal chance of being selected. Therefore, this sampling procedure preserved a normal distribution of the traits of students enrolled in the Insect Biology (ENTO115) online course, which is the one of the main prerequisites for conducting experimental research.

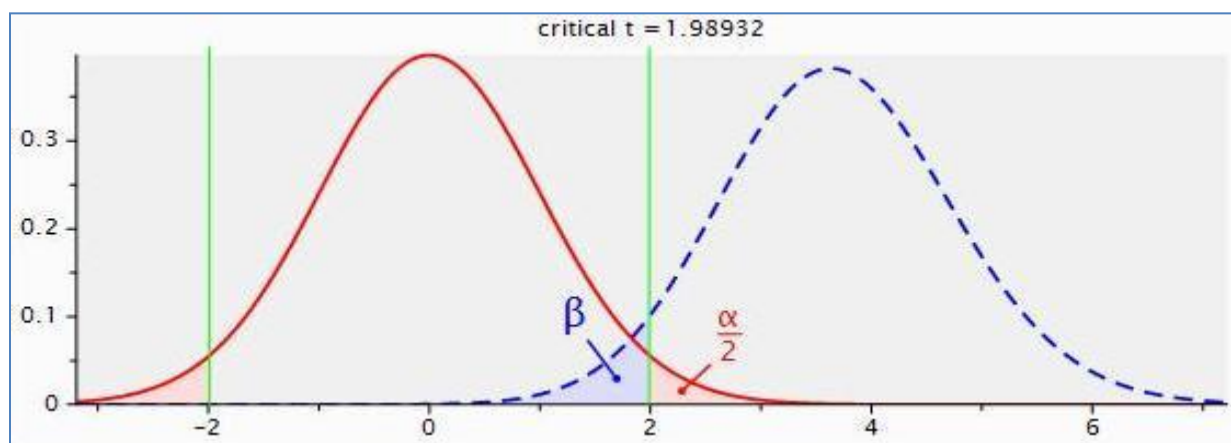
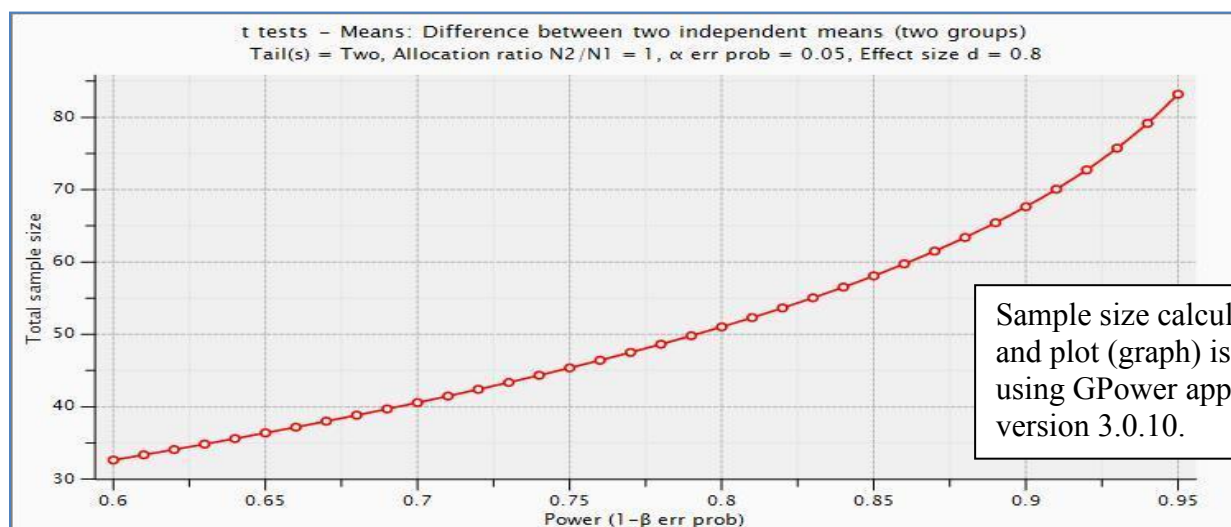
For a more rigorous study, the sample size should be over 200 participants. However, obtaining 200 participants for this study was difficult to accomplish. Considering the circumstances related to the limited number of graduate students enrolled in online courses, the number of students in the sample was less than 200.

Nevertheless, for valid statistical analysis, it is acceptable to have an even smaller sample size because I expected a large effect size ( $d=.80$ ). For a large effect size ( $d=.80$ ) with alpha

level at .05 (two tails), the total number of selected students for the study sample should be 84 (Figure No. 3.4 & No. 3.5 ).

Figure No. 3.4

*Sample Size Analysis – Graphical Representation*



Therefore, at least two basic limitations were taken into consideration prior to conducting the sampling procedure and determining the sample size. The first refers to the number of

students enrolled in online courses in the domain of education at UNL. In other words, the size of the sample depends on the total number of available online students. The second limitation refers to students' willingness to participate in this research.

*Thus, the population for this study was undergraduate students who were attending online courses with large enrollments at UNL, while the sample of the study consists of all students who agreed to take part in the study. The required sample size was 84 students for the given alpha level and effect size.*

### **Qualitative Sampling Procedure**

Taking into consideration that this was a sequential explanatory mixed methods research design, qualitative sampling procedures were based on the results of the first (quantitative) phase of the research. In Tashakkori and Teddlie's (2003) view, an array of sampling strategies is available to the mixed methods researcher. These authors divide sampling strategies into two major groups: probability (simple random sample, systematic random sample, stratified random sample, and cluster random sample) and purposive sampling (convenience sample, extreme deviant sampling, typical case sample, homogenous case sampling, stratified purposive sampling, opportunistic, and snow-ball sample). Similar to the above classification, Patton (1990) proposed sampling strategies for selecting participants in the qualitative phase of an examination. Patton's classification includes the following 15 different types of samples: intensity sampling, extreme or deviant case sampling, maximum variation sampling, homogeneous samples, typical case sampling, stratified purposeful sampling, critical case sampling, snowball or chain sampling, criterion sampling, theory-based sampling, confirming and disconfirming cases, purposeful random sampling, sampling politically important cases, and convenience sampling.

For the purpose of this study, the probability sampling approach was used in selecting participants. Specifically, the *stratified random sample* was the most appropriate sample type for at least two reasons.

- a) First, this type of sample provides more diverse participants across the sample.

Therefore, by selecting students from different strata, the research had a more representative sample for obtaining qualitative data.

- b) The second stratified random sampling technique added credibility to the sample, which is one of the most important elements for further data analysis (Wengraf, 2001).

In this particular study, the sample strata were formed based on the students' assignment grades. Therefore, the following three strata were identified in the control and experimental groups: students with assignment grades A, B, and C. I randomly selected one participant from each stratum in both groups. This type of sample could also be classified as a *proportional stratified random sample*, because I took the same number of participants from each stratum (Johnson & Christensen, 2007).

The total sample size for the qualitative phase of investigation was six participants ( $n=6$ ). In other words, the sample included two participants whose sum of the assignment scores corresponded to the grade A. One student with grade A was selected from the control group while another was taken from the experimental group. Another two participants selected for the qualitative interview were students whose assignment grade was B. Finally, two participants with assignment grade C were also included in the qualitative sample.

Regarding sample size, Creswell and Plano Clark (2007) argue that it is better to have a smaller sample size in the qualitative phase of research than a large number of participants.

Collecting qualitative data from a small number of participants will provide more in-depth information about the person's view of the research phenomena (i.e., teaching presence).

### **Data Collection and Procedures**

Data collection was described and organized according to the following topics: a) Types of data collection; b) Administration procedures for data collection and; c) Recording the data collection.

#### **Types of Data Collection**

This study utilizing the explanatory sequential mixed methods research design required the collection of two different types of data: quantitative and qualitative. Therefore, due to the nature of the research design, data were collected in two different phases. This implies that data collection did not happen at the same time and that students provided their responses on several instruments during and at the end of the intervention.

The quantitative data were collected periodically throughout the course. The quantitative data can be classified as an *interval type of data*. This type of data was obtained using the CoI/TPS, ACRQ, FRAP, ASP and FPP research instruments. The quantitative data were presented as numeric values.

The *qualitative data* were collected in the follow up second phase of research. Qualitative data referred to the students' responses to the interview questions. The qualitative data were initially obtained as verbal statements that were consequently transcribed into textual format for further analysis.

Finally, this mixed methods study included gathering an additional third set of the *categorical type of data*. Categorical data referred to the following demographic characteristic of



the students: gender, whether the student was living on/off campus, year of study, and previous online learning experience.

### **Administration Procedures of Data Collection**

Once IRB approval was obtained and students agreed to participate in the study, I started with intervention and data gathering. The design of this study assumed two phases in data collection as well as implementation of different procedures for gathering quantitative and qualitative data. Therefore, quantitative data were gathered in the first phase by using data extraction protocols (FRAP and ASP) and hard copy surveys and questionnaires (CoI/TPS and ACRQ). The qualitative data were gathered in the second phase by interviewing the participants of the study. It is important to note that both types of data were collected from students in the experimental and control groups. Also, data collection took place several times during the 2010 spring semester.

**The first phase.** The process of quantitative data collection started in the fourth week of the semester. According to the syllabus schedule for the online course Insect Biology (ENTO115), at the beginning of the fourth week, the students from both groups (control and experimental) went to the Department of Entomology to take insects (Madagascar Cockroach) for their pet insect observation assignment. Prior to picking up the insect, all students completed the ACRQ. The ACRQ was administrated one more time during the semester and eight weeks later when students started to work on their second pet insect (Tobacco Hornworm) observation assignment. It took approximately 2-3 minutes to fill out the ACRQ.

Quantitative data related to the frequency of reviewing the announcements and the length of time between the time/date of viewing the announcement and the time/date of assignment

submission were collected every week. For this purpose I used specially designed data extraction protocols (FRAP and ASP). This data were retrieved from the UNL Blackboard server using Blackboard statistical tools for tracking students' coursework activities. All data were carefully recorded in data extraction protocols on a weekly basis.

Data related to the students' course performance (assignment points) were collected in the last week of the semester. I used the Blackboard grade book as the source for this quantitative data. The students' assignment points were also recorded in the FPP data extraction protocol.

Finally, the CoI/TPS was administered at the end of the semester. Although Insect Biology (ENTO115) runs entirely as an online course, the students were required to take the final exam in a classroom, which is located at the Department of Entomology. The students were asked to complete the CoI/TPS survey immediately after the final exam was over. The CoI/TPS was administered in hard copy format. For more effective administration of the survey, I obtained assistants who were instructed specifically about survey administration procedure. It took about five minutes for students to complete the CoI/TPS survey.

**The second phase.** One week before the second phase of data collection started, I sent an email with basic information about the interview to students who had been selected for interviews. Qualitative data collection was conducted after the final exam was over and students had completed the CoI/TPS.

Six interviews were conducted in total. I started the interview with a standard introduction (the purpose of the study, etc.) and an ice-breaker question. Then, I proceeded to the main questions and ended the interview with a closing question and a thank you note. I

memorized all the interview questions to facilitate a good communication flow with the participants. I recorded the responses in writing in the interview protocol. Interviewees' responses in all six interviews were also audio-recorded using a digital voice recorder. The average length of the interviews was between 15-20 minutes. In this study there was no need to train additional interviewers because I collected all data myself. For their participation in the interview, the students received a \$5 gift card.

Finally, it is important to note that prior to conducting any kind of data collection, students received general information about the purpose of the research and the format of data collection (how long it would take to fill out the instruments/respond to interview questions). I provided a precise date and time to collect the quantitative and qualitative data.

### **Recording the Data Collection**

Data recording is an integral part of the research process. Recording was performed in order to preserve the participants' responses, which is important for both the qualitative and quantitative phases of the investigation. Precisely recorded data helped me better organize the obtained quantitative and qualitative data for the next step in the research process: data analysis.

For recording the qualitative data, an interview protocol was used. The interview protocol contained not only a list of questions and text-boxes for student answers, but also contained basic information such as time, date, and place of interview. Apart from recording data using a paper and pencil, students' responses were recorded in audio format as well. Audio recording of qualitative data captured the students' full detailed responses, which was very useful for deeper analysis. In addition, all audio-recorded responses were transcribed, and transcripts are used for the further qualitative data analysis.

Quantitative data were initially recorded by using a classic hard copy format of the questionnaires and data extraction protocols. Thus, the CoI/TPS and ACRQ were used for recoding the data regarding students' perception of teaching presence and the level of announcement content recall. Data related to the students' engagement in course activities (the frequency of reviewing introductory messages and the length of time between the date/time of reviewing the introductory message and the date/time of assignment submission) and students' course performance were recorded using purposefully designed protocols (FRAP, ASP, and FPP) for extracting data from the UNL Blackboard server.

Initial hard copies of collected data were converted into electronic form before the data analysis. All quantitative data will be kept as electronic records in the SPSS database for further use and analysis. The hard copy records of the data were destroyed once I created the SPSS database.

### **Data Analysis**

Data analysis within the mixed methods design includes *two different analyzing procedures*, as discussed by Creswell and Plano Clark (2007). In this study, I utilized the set of statistical methods and procedures that included the quantitative dataset analysis and procedures that included analysis of the qualitative data using qualitative methods. Therefore, *two major phases of data analysis* can be identified: *quantitative data analysis* and *qualitative data analysis*.

The quantitative data were analyzed in the first phase and based on these results I chose the sample for qualitative data collection. Analysis of the qualitative dataset took place in the second phase of data analysis. Finally, in order to conduct an adequate interpretation of the

results, quantitative and qualitative data analysis addressed the research questions proposed in the study.

Although the steps in each of these phases were distinctively different, there were a few common elements (Creswell & Plano Clark, 2007). Therefore, analysis of quantitative and qualitative data in this study were described and organized according to the topics described below:

- a) Preparing and exploring data for analysis,
- b) Analyzing the data, and
- c) Representing the data analysis.

### **Quantitative Data Analysis**

**Preparing and exploring data for analysis.** After conducting the intervention, quantitative data were obtained from both the experimental and control groups of students. The data were collected using five instruments: CoI/TPS, ACRQ, FRAP, ASP, and FPP. All data were entered into the Statistical Package for the Social Sciences (SPSS) spreadsheet on a personal computer and once data had been compiled, all statistical analysis was conducted using SPSS.

Thus, the first step in the quantitative data analysis was *converting raw data into numeric form*, which is necessary for importing data into the statistical software package. Each response on the five point Likert scale within the CoI/TPS instrument was assigned a numeric value. For example, *strongly agree* was assigned the numeric value 1, *agree* was assigned the numeric value 2, etc. Also, each of the questions on the ACRQ, FRAP, ASP and FPP was labeled with an appropriate name (usually an acronym) for importation into the statistical software spreadsheet.

Then, a new database and adequate variables were developed in order to perform a computer analysis of the data.

Exploring the quantitative data referred to *visually inspecting the data entry*, as well as *descriptive statistical analysis*. I checked to see if any data was missing from the SPSS spreadsheet. Furthermore, descriptive statistical data showed data trends and provided simple summaries about the sample and the measures related to the dependent and independent variables. Data were presented using graphs and tables. From the descriptive statistical analysis standpoint, I looked for three major characteristics of data:

- a) the distribution of data;
- b) the central tendency; and
- c) the dispersion of data.

These descriptive parameters of quantitative data should show me if the responses correspond to a normal distribution. Therefore, considering the main purpose of this study, the following descriptive statistical procedures were applied.

The distribution of data was presented through the *frequency* of individual values for each research variable. Demographic data were shown in percentages and through graphs. The central tendency of data refers to the central values within the distribution. There are three major types of central tendency measures: mean, median, and mode, but for the purpose of this research, only *means* will be used. Finally, dispersion refers to how data are spread around the central tendency value. Range and the standard deviation are two statistical measures of the dispersion of data. In this study, I used *standard deviation* because it is more accurate. Standard deviation shows the average distance from the mean for all data in the dataset for one variable.

**Analyzing the data.** In this phase, I chose and performed the appropriate statistical test in order to analyze the quantitative data and discover if there were a difference between the experimental and control groups of students that had been caused by the educational intervention. Therefore, analyzing the data by using different statistical tests should address the research questions and hypothesis.

To answer the proposed questions it was necessary to go beyond descriptive statistics and apply more advanced procedures such as the *Analysis of Variance (ANOVA)*, or more precisely, the *t-test*. The ANOVA is a statistical procedure that provides evidence about *differences between the means* of two (or more) groups. For the purpose of this study, *t-tests* were conducted because my intent was to compare the means of the control and experimental groups. A *t-test* is a special version of the ANOVA used whenever it is necessary to compare the means of two groups. The same results could also be obtained through the use of ANOVAs. For conducting *t-tests* or ANOVAs, two main assumptions were satisfied in this study: a) randomization, (i.e., subjects [online students] were randomly selected in both subsamples), b) and the distribution of the means for each subsample being relatively normal with equal variances.

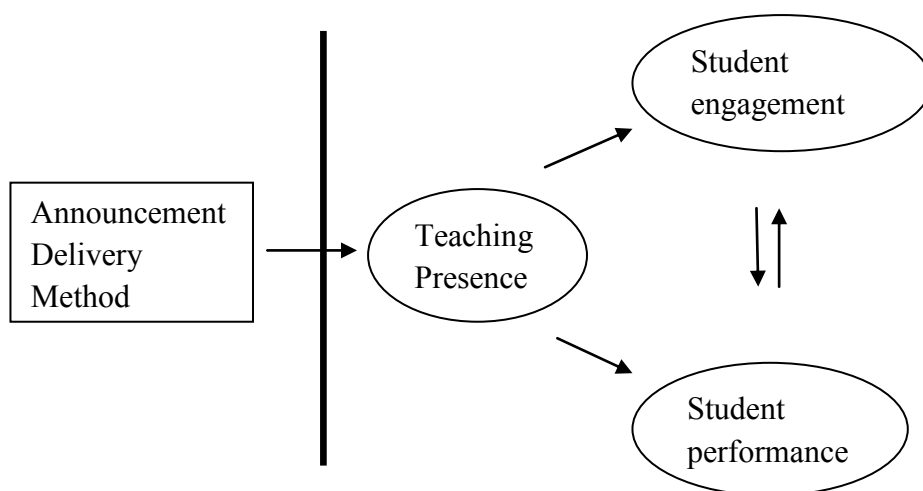
Thus, by using *t-tests*, I discovered whether or not the means of the two groups were *statistically* different from each other. There are two different types of *t-tests*: the one-sample *t-test* and the two-sample *t-test*. For analyzing data in this study, *the independent (two sample) t-test procedure was applied* because the one-sample *t-test* refers to the comparison of the mean in one dataset to the standard value (mean) that is already known or given, while the two-sample *t-test* refers to the comparison of two group means. An independent *t-test* was used in order to compare the two subsamples: the group of students who received the announcements in video

format, and the group of students who received the text-based weekly announcements. The significance of the data was set at the .05 Alpha level.

One of the additional goals of this study was to statistically verify the hypothesized theoretical model based on the dependent research variable (teaching presence, student engagement, and student performance). The proposed theoretical model is labeled the *Teaching Presence, Engagement and Performance Model (TPEP)*. The basic TPEP assumption was that enhancing teaching presence (TP) by using different delivery media would enhance student course engagement (SE) and student performance (SP). In addition, I assumed that student engagement and student performance are mutually connected, and therefore that the enhancement of one element would lead to the enhancement of the other. In other words, the model elements SE and SP depend of the level of TP as well as on each other. The structural equation model TPEP is presented on the Figure No. 3.6.

*Figure No. 3.6*

*Teaching Presence, Engagement and Performance Model - TPEP*





SEM can be defined as *the use of two or more structural equations to model multivariate relationships*: “A multivariate relationship, as the phrase is used here, refers to those that involve simultaneous influences and responses” (Grace, 2006, p. 11). By using structural equation modeling (SEM) and conducting a *Multiple Group Analysis-SEM* test, I determined if the hypothesized structural TPEP model was equivalent across the experimental and control groups (Green, Camilli, & Elmore, 2006; Schumacker & Lomax, 2004;). For running a Multiple Group Analysis-SEM test, I used MPlus Software with assistance provided by the UNL-NEAR Center.

An additional statistical procedure, correlation, was performed as well. I used *Pearson's Correlation Coefficient (r)* to measure the strength of the linear relationship between two variables. A correlation between two variables is represented as a numerical value between -1 and +1, which shows the degree of association between the two variables. In this particular study, I was interested in a correlation between some of the dependent variables, for example, the level of student engagement with the students' final assignment points, or with their level of announcement recall. Such patterns were identified across the experimental and control groups.

It is important to point out that those analyzed correlations between the dependent variables were only “*collateral*” findings that were used for better understanding the observed phenomena or for making directions about further research in this area. Therefore, they imply possible relationships between the dependent variables that were not addressed in the proposed research questions.

**Presenting the data.** After the data analysis phase it is necessary to present the findings. Statement summaries are the most common way of presenting findings. However, the results of

the quantitative data analysis were reported either in table or chart format. Charts or graphs present the trends and distribution of data that usually refer to descriptive statistical measures.

### **Qualitative Data Analysis**

**Preparing and exploring data for analysis.** In this phase, interview protocols were carefully organized and prepared for review. The audio-recorded materials were stored in a personal computer and prepared for transcription into a word-processing file for further analysis. Printed transcripts had large margins suitable for making notes. The large margins provided the space to write impressions and compare the content of the protocol and audio-recorded materials in order to make interviewees' responses more accurate. Furthermore, in order to gain a broadened perspective (observation) and an overall understanding of the collected qualitative data, all student responses were reviewed and short memos were written in the margins of the transcripts. The memos helped me in the process of developing preliminary meaning units (codes), code groupings, sub-themes, and themes.

**Analyzing the data.** The data analysis was conducted according to the general and more specific strategies for analyzing the qualitative data proposed by Creswell (1998) and Stake (1995). The initial step in data analysis was a comprehensive review of the gathered information, including comments and impressions about the participants' responses. The interview transcripts will be reviewed several times in order "to obtain the sense of overall data" (Creswell, 1998, p. 140). This procedure also implied that I as the researcher took an inductive approach in analyzing and thinking about the obtained data.

Coding the data was the first step in qualitative analysis. According to Stake (1995) and Creswell (1998), coding can be defined as a process of reducing and elaborating observations to thematic categories or making a categorical aggregation of themes. Stake (2008) also pointed

out that “reducing observation to the simple categories” (p. 132) is one of the most important elements in the coding process. I used the *in vivo coding strategy*. In vivo coding implies that each code comes from the exact words of the participants. According to Strauss, (1987) in vivo coding has the advantages of analytic usualness and imaginary. Coding implies the process of grouping the evidence and labeling the ideas. After developing the codes, it is necessary to transform them into broader sub-themes and general themes. The code words were written on the left margins, and the broader themes on the right. If necessary, themes might be grouped into larger elements such as dimensions and perspectives. The same coding procedure was repeated for each of the six interview transcripts. Finally, they were compiled into a master list of codes, sub-themes, themes, and perspectives.

**Presenting the data.** Qualitative findings were presented as an integral part of interpretation and final results discussion. Furthermore, qualitative findings might be presented through visual elements such as concept maps.

### **Potential Ethical Issues**

Ethical issues are an important aspect of my research involving humans. There were many dilemmas regarding ethical issues that were taken into consideration prior to and during the period of conducting the research. Authors Brownlow and O’Dell (2002) discussed some aspects of ethical issues in online learning environments. The most general researcher concerns about ethical issues refer to privacy and confidentiality, and the consent of the university, teachers, and students. The question of who owns the collected data is also a major question that needs to be answered before the research is performed. In their point of view, personal data should not be communicated externally without the consent of the individuals who supplied the data. Brownlow and O’Dell (2002) pointed out ethical guidelines for researching online groups

proposed by Sharf. Some of those guidelines were relevant for this research. First, I anticipated whether or not the purpose of the research conflicted with or was harmful to the participants. Then I introduced myself, my intent, and the purpose of the study. In addition, I demonstrated a respectful sensitivity toward the psychological boundaries, vulnerabilities, and privacy of the participants.

The most adequate ethical guidelines that could be applied in this research were proposed by Kanuka and Anderson (2007). They argue that five types of information should be provided in order to ensure the participants that the research has a scientific purpose. First of all, participants should be acquainted with the purpose of the research and the identity of the researcher. It is necessary to provide information about the nature of participation. Then, participants should know the duration of the research and the full description of research procedures. Furthermore, participants should be voluntarily engaged in the research.

All of the above stated elements related to ethical issues were taken into consideration prior to and during the period of conducting research on students' perceptions of online learning communities. Also, these recommendations were taken into account and discussed in the application requesting IRB approval.

The IRB application was submitted on November 06, 2009 and the IRB committee approved the research on December 05, 2009 (Appendix E).

## **CHAPTER 4: RESULTS OF THE STUDY**

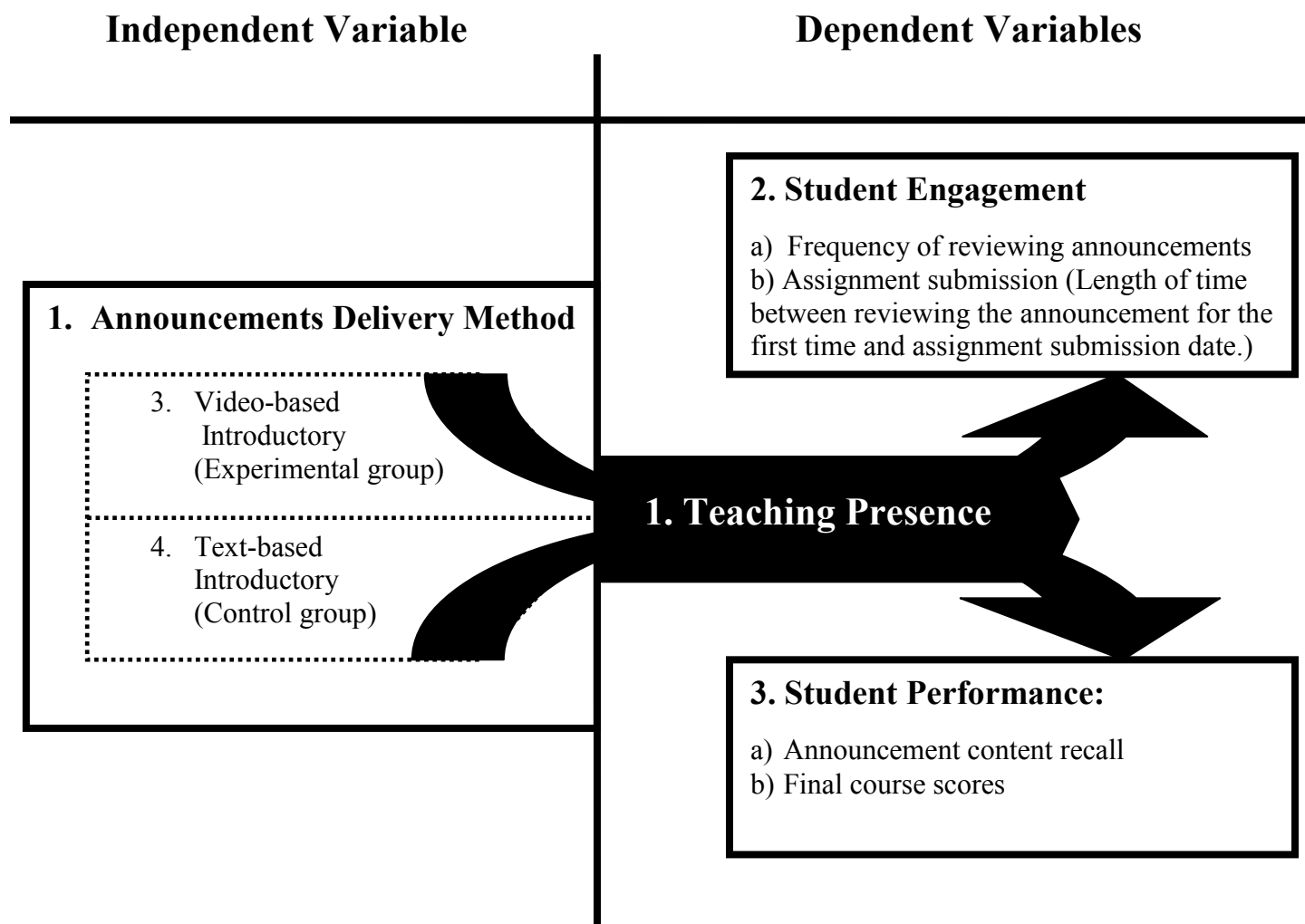
The intent of this study was to explore whether or not announcement content presented to students via asynchronous video over the entire semester was perceived to be more effective for enhancing teaching presence than announcement content delivered to students via the traditional text-based method. Also examined was the extent to which announcement delivery method influenced student course engagement and performance. Finally, the aim of this study was to identify if there were a difference in the interrelationships between teaching presence, student course engagement, and student performance in the control and experimental groups of students.

The study used a mixed methods research design consisting of two phases with the research intervention as a pre-phase. Quantitative data collection was conducted in the first phase while the second phase was composed of qualitative interviews. This study utilized a standard classification of variables: independent and dependent variables. The independent research variable was announcement delivery method (video-based and text-based delivery). The independent variables were measured on quantitative surveys and grouped into the following three categories: teaching presence, student engagement, and student performance. Teaching presence was observed and measured through three indicators (subscales) labeled design and organization, facilitation, and direct instruction. There were two indicators of student engagement: frequency of reviewing announcements and assignment submission. Finally, the level of student announcement content recall and overall course points served as indicators of the

third dependent variable: student performance. Below is a flow diagram (*Figure 4.1*) of the model of research variables.

*Figure No. 4.1*

*Model of research variables: Flow diagram*



This chapter begins with a descriptive statistic of the study sample and instrument response rate. This section is followed by a presentation of the independent sample *t-test* findings for the students' perceptions of teaching presence, engagement in coursework, and performance. Finally, the presentation of the quantitative data ends with SEM-multi-group analysis findings

for the interrelationships between the main variables in the research. The statistics (descriptive and inferential) in this study were calculated using the Statistical Package for the Social Sciences and Mplus software. The qualitative inquiry findings are presented in the second section. This section starts with a description of the participants and the settings. Finally, this chapter includes participants' qualitative responses organized by themes and cross-case themes.

### Study Sample Characteristics

The target population in this study was undergraduate students enrolled in an online course delivered by LMS Blackboard. The research sample was drawn from the Insect Biology (ENTO115) course offered by the Department of Entomology at the University of Nebraska-Lincoln. The initial course enrollment was 97 students. Students were randomly sorted into two research groups: control (48 students) and experimental (49 students). Therefore the total sample size in this research study was 97 students, which satisfied the requirement for conducting a valid statistical analysis (*t-test*,  $d = 80$ ,  $\alpha = .05$  - two tails). The projected sufficient sample size was 84 students per group.

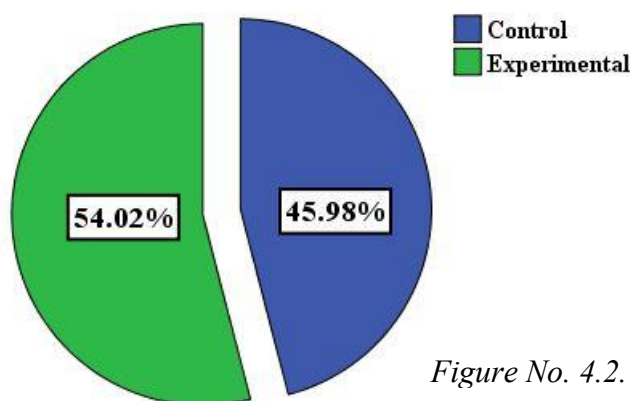
Due to course dropout, the final sample used in this study was slightly smaller. At the end of the semester the control group was reduced to 40 students while the experimental group was reduced to 47 students. The dropout rate for the entire course was 10.31%. Details regarding sample size are presented in *Table 1*.

*Table 1*  
*Sample size*

Research Group	Initial enrollment	Override*	Drop out	Did not participate in the study	Final number of students (sample size)
Control	48	0	8	0	40
Experimental	49	12	2	1	47

\*Students who started with coursework after the official enrollment period were not included in statistical analysis.

It is important to point out that the course instructor allowed late enrollment of students into the Insect Biology (ENTO115) course. Students who began their coursework after the official start date were automatically assigned to the experimental group. These students (n=12) were not included in the study sample because I could not apply the same randomization criteria. Also, one student assigned to the experimental group did not want to take part in the study; therefore this student was excluded from the research and further data analysis. Thus, the final research sample consisted of 87 students total at the end of the semester. Figure 4.2 shows a perceptual ratio of students distributed in the control and experimental group.



*Figure No. 4.2. Demographic Results: Size of the Study Groups*

The study sample for the qualitative analysis was determined by students' course outcomes. A stratified random sample was used in this study. Based on their final course points, students were divided into three strata: advanced students, average students, and underachievers. That is, one student was randomly selected from each stratum for the interview in both the control and experimental groups. In addition, a semi-structured interview was conducted with the course instructor.



To gain better insight into the sample characteristics used in this research, obtained data included participant traits such as gender, year of study, living status, and online learning experience. The demographic data for the entire sample is reported in the form of pie chart diagrams and overall percentages. Additionally, for each demographics response, follow up Pearson's Chi-square ( $\chi^2$ ) tests were conducted to explore the association of the participant's traits with the announcement delivery method, level of teaching presence, level of student engagement, and student performance.

### Gender

In terms of gender, 32 students reported being male and 55 students reported being female. The percentage of a gender distribution for the study sample is presented below in Figure 4.3.

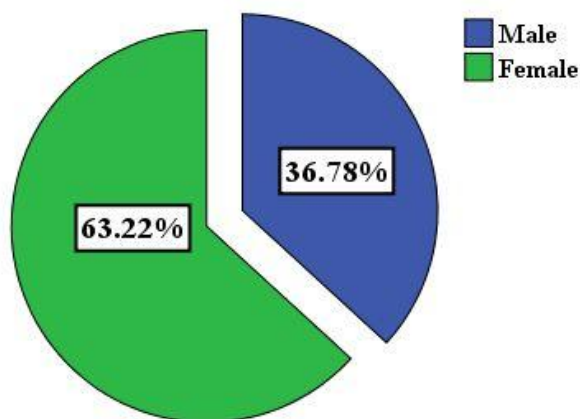


Figure No. 4.3. Demographic results: Gender (N=87)

A Chi-square ( $\chi^2$ ) test showed that gender responses had no significant association with the delivery modality by which students received the content of course announcements,  $\chi^2$  (1, N=87)=0.143, n.s.

### Year of study

Students were asked about their year of study. These responses are grouped in four categories as follows: Freshman (six), Sophomore (24), Junior (20), Senior (31), Missing data (six). The percentage of the distribution is presented below in Figure 4.4.

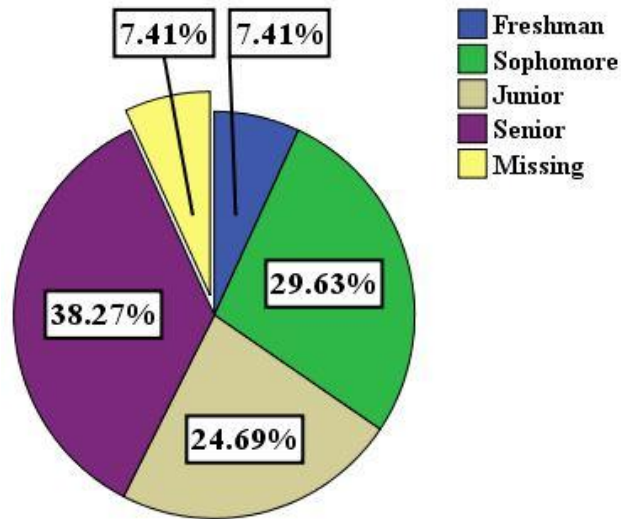


Figure 4.4. Demographic results: Year of Study ( $N=87$ )

A Chi-square ( $\chi^2$ ) test showed that year of study had no significant association with the delivery modality by which students received the content of the course announcements,  $\chi^2 (2, N=87) = 0.853$ , n.s.

### Living status

Students were also asked about their living status. The response included two categories: on campus and off campus. A total of 50 students reported living on campus while 31 reported that they were living off campus during the 2010 spring semester. Six students did not report

their living status. The percentage of the distribution of student living status for the study sample is presented below in Figure 4.5.

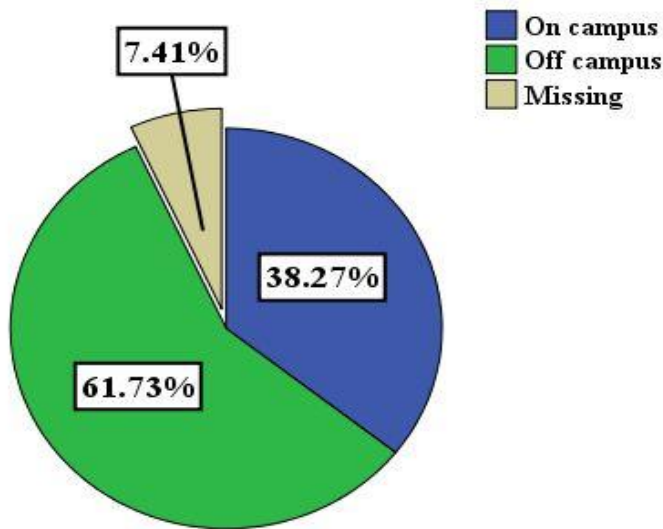


Figure No. 4.5 Demographic results: Living Status (N=87)

A Chi-square ( $\chi^2$ ) test showed that living status responses had no significant association with the delivery modality by which students received the content of the course announcements,  $\chi^2 (1, N=87) = 0.563$ , n.s. However, a Chi-square ( $\chi^2$ ) test showed that living status responses had significant association with the students' year of study,  $\chi^2 (3, N=87) = 0.543$ ,  $p = 0.000$ . Correlation is significant at the 0.05 level (2-tailed). Results showed that freshmen and sophomores primarily lived on campus while juniors and especially seniors lived off campus. This finding indicates that students sampled for this research study reflect the common trend and distribution regarding student living statuses at American universities.

### Online learning experience

Considering that this research study aimed to explore teaching strategies in an online learning environment, students were asked about their previous online learning experience. Those without online learning experience accounted for 26 students, whereas the majority of the students (50) had attended between one to three online courses. Only five students had been enrolled in more than three online courses while six students did not provide an answer to this question. A percentage of the distribution of student online learning experience for the study sample is presented below in Figure 4.6.

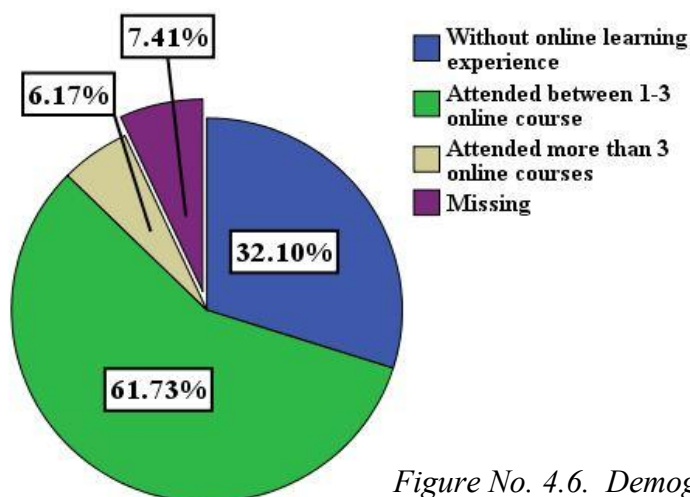


Figure No. 4.6. Demographic results: Online Learning Experience

A Chi-square ( $\chi^2$ ) test showed that online learning experience responses had no significant association with the delivery modality by which students received the content of course announcements,  $\chi^2 (2, N=87)=0.853$ , n.s.

With regard to the demographic characteristics of the participants within the control and experimental groups, the sample is balanced and shows relatively equal distribution of student traits across both groups. These findings are presented in *Table 2*.

*Table 2*  
*Demographics characteristics of the participants*

Research Group						
	Gender					
	Female	Male	Missing	Total		
Control	18 (45%)	22 (55%)	0	40		
Experimental	14 (29.78%)	33 (70.22%)	0	47		
	Year of Study					
	Freshman	Sophomore	Junior	Senior	None declared	
Control	2 (5%)	10 (25%)	11 (27.5%)	14 (35%)	3 (7.5%)	40
Experimental	4 (8.51%)	14 (29.78%)	9 (19.1%)	17 (36.17%)	3 (6.38%)	47
	Living status					
	On campus	Off campus	None declared	Total		
Control	9 (22.5%)	28 (70%)	3 (7.5%)	40		
Experimental	22 (46.81%)	22 (46.81%)	3 (6.38%)	47		
	Online experience					
	No experience	Attended 1-3 courses	Attended more than 3 courses	None declared		
Control group	13 (32.5%)	22 (55%)	2 (5%)	3 (7.5%)	40	
Experimental group	13 (27.66%)	28 (59.57%)	3 (6.38%)	3 (6.38%)	47	

Overall, the characteristics of the study sample reveal that the study participants consisted of more female than male students, and more students living on campus than off campus during the 2010 spring semester. The majority of students had attended one to three online courses and there was a relatively equal distribution regarding the students' year of study. Additionally, the demographic characteristics within each group showed low levels of variation.

Finally, the Chi-square ( $\chi^2$ ) analysis did not show any association between demographic characteristics of the participants and the announcement delivery method.

### **Instruments: Response Rate, Reliability and Validity**

This study utilized six different instruments for collecting research data. The instruments in this study may be generally grouped into quantitative and qualitative instruments. For the purpose of gathering quantitative data, the following five instruments were used:

- 1) *Community of Inquiry Survey –Teaching Presence Subscale (CoI-TPS)*
- 2) *Announcement Content Recall Questionnaire (ACRQ)*
- 3) *Frequency of Reviewing Announcement Protocol (FRAP)*
- 4) *Assignment Submission Protocol (ASP)*
- 5) *Final Points Protocol (FPP)*

For the purpose of collecting qualitative data in the second phase of the study, a semi-structured interview was used.

- 6) *Interview Protocol (IP)*

Two slightly different versions of the interview protocol were used. The first interview protocol version gathered qualitative data from the students and the second version gathered qualitative data from the course instructor. The main difference between the two IP versions was in framing questions in a way that would reflect the student or instructor standpoint about the research intervention.

With regard to subject response rate, the data showed a considerably high level of instrument completion. In total, 87 students were invited to complete the ACRQ instrument, which gathered a set of demographic data and the level of student announcement content recall. Subject response rate on this instrument was considerably high at 81 (93.1%), while six students

(6.9%) did not complete the questionnaire. The ACRQ was administered twice during the research intervention. Subject response rate on the second ACRQ was 94.3% or 82 students; only five students (5.7%) did not take the questionnaire.

Subject response rate on the CoI-Teaching Presence Scale was also high. Of the 87 participants included in the study, 83 students (95.4%) completed the CoI-TPS. Four students (4.6%) did not complete the survey. Two possible reasons contributed to such a high subject response rate on ACRQ and CoI-TPS. First, both instruments were administered in hard copy format. Second, the administration procedure was well-organized and the researcher of this study approached each of the participants individually and politely invited them to take part in the survey.

Data regarding the frequency of reviewing the announcement, the length between reviewing the announcement for the first time and submitting the assignment, and final course points were obtained through Blackboard statistical tools and grade center. These three categories of data were obtained for all 87 (100%) students. In order to collect this type of data, the following protocols were used: FRAP, ASP and FPP.

Invitations to participate in the qualitative interviews were initially sent to six randomly selected students based on sampling criteria. However, in order to obtain six participants to conduct the interview, it was necessary to send the same invitation multiple times during the two week period. In total, 26 (29.88%) students were invited to participate in the qualitative phase of the study. I stopped sending the invitations after the required number of participants (six students) agreed to take a part in the qualitative interviews. Overall, the subject response rate to an invitation for the qualitative interview was 23.07 %.

For the evaluation of the quantitative and qualitative measurements used in this study, I applied standard criteria that provided the answer to two critical questions: Did the researcher measure what the researcher intended to measure (precision of measurement), and does the same measurement process yield the same results (accuracy of measurement). In other words, the research instruments were assessed through reliability and validity testing.

As proposed by Garrison, Anderson and Archer (2000), the Community of Inquiry Survey has been developed to verify the theoretical concept of the Community of Inquiry model. It is a self-report 34 item (five-point Likert scale) instrument designed to measure the level of a) teaching presence, b) social presence, and c) cognitive presence in an online learning environment. For the purpose of this study, only the *CoI-Teaching Presence Subscale (CoI/TPS)* was used. According to Swan, et al. (2008), Cronbach's Alpha yielded internal consistency for the CoI equal to .93, and .94 for the Teaching Presence subscale. In a study conducted by Shea, Swan, Li and Pickett (2005), Cronbach's Alpha for the CoI/TPS was .97. Furthermore, Cronbach's Alpha for CoI/TPS subscales Design and Organization was .94 and for Directed Facilitation was .97. Overall, data indicates that the CoI/TPS is a reliable measure of teaching presence in online instruction.

I developed the Announcement Content Recall Questionnaire (*ACRQ*) to measure the level of students' announcement content recall. The entire questionnaire consisted of 11 items and was administered twice: in the third week of the semester and at the end of the second part of the semester (eighth week). To determine the reliability of the ACRQ, I conducted the Cronbach's Alpha test to measure the internal consistency of the questionnaire items. The Cronbach's Alpha for the ACRQ was equal to .71. DeVellis, R.F. (1991) suggested acceptable



and unacceptable levels of the Cronbach's Alpha coefficient and according to this criteria, Cronbach's Alpha .711 is a minimally acceptable value for measures in the field of psychology.

I also conducted validation of the ACRQ items using the content validity method and pilot testing. The content validity method implies validity of a qualitative measure of items and is based on expert judgments in the target field of research (Sirkin, 2006; Vogt, 2005). In Carmines and Zeller's (1991) view, this validation method "is based on the extent to which a measurement reflects the specific intended domain of content" (p. 20). Thus, the ACRQ items were validated by content experts in the fields of instructional technology, distance education, and biology. Furthermore, the ACRQ questionnaire was validated through the pilot testing procedure. Subjects of the pilot testing were graduate students majoring in the field of instructional technology at UNL. The participants of the pilot test reported that they understood the questions well and did not suggest any changes.

The content validity method and pilot testing were also used for validation of the protocols that aimed to gather quantitative data (FRAP, ASP, FPP) regarding frequency of reviewing announcements, length of time between viewing the announcement for the first time and assignment submission, and final course points.

The semi-structured interview qualitative instrument was also subject to validation. The interview questions were reviewed for content validity by experts in the field of instructional technology and insect biology. I accepted suggestions and recommendations and revised the interview questions. Furthermore, the interview protocol was pilot-tested on several graduate

students in order to identify potential researcher bias and inaccuracy. No major changes were made based on the pilot testing results.

### **Student Perception of Teaching Presence**

The main research question in this study refers to the concept of teaching presence and the possibility of enhancing student perception of teaching presence using a video delivery method in providing course announcements. This study asked the following question: To what extent does introductory announcement delivery method affect teaching presence in primarily text-based online courses supported by LMS Blackboard? The null hypothesis for this research question was “There will be no significant differences in the perceived level of teaching presence between groups of students who received weekly video introductory and students who were introduced to weekly coursework activities via textual announcement.” I hypothesized that students who were assigned to the introductory video study group (experimental group) would score higher on the *CoI/TPS* Survey than students who received announcements in text-based format.

### **Review of the Subjects Responses on the Teaching Presence Scale**

The overall student response in this research instrument was considerably high. In total, 95.4% of the students completed the *CoI/TPS* (the experimental group had 100% completion and the control group had 90% completion). The teaching presence scale consists of three subscales: Design and Organization, Facilitation, and Direct Instruction. In the tables below (*Table 3* and *Table 4*), basic descriptive statistics are provided, including the mean value of student responses on the entire survey and on the three subscales separately.

*Table 3.*  
*Group Statistics: Teaching Presence Scale – Total*

	GROUP	N	Mean	Std. Deviation	Std. Error Mean
Teaching Presence Scale	Control	36	51.9444	14.50309	2.41718
	Experimental	47	56.9362	12.29776	1.79381

*Table 4.*  
*Group Statistics: Teaching Presence Scale – Subscales*

<i>TPS – Subscales</i>	GROUP	N	Mean	Std. Deviation	Std. Error Mean
Design and Organization	Control	36	16.61	4.612	.769
	Experimental	47	17.91	3.999	.583
Facilitation	Control	36	22.94	7.195	1.199
	Experimental	47	26.19	5.663	.826
Direct Instruction	Control	36	12.39	3.254	.542
	Experimental	47	12.83	2.959	.432

The obtained findings indicate that based on the mean value for the entire CoI/TPS, students from the experimental group perceived more teaching presence than the students from the control group. When the CoI/TPS is broken into its subscales, the mean value for the two groups is also quite similar in the subscales of Design and Organization and Direct Instruction. However, there were considerable differences in the mean value on the subscale Facilitation (Control  $M=22.94$ ,  $SD=1.99$ ; Experimental  $M=26.19$ ,  $SD=.826$ ).

### **Teaching Presence and Announcement Delivery Method: *t*-Test Findings**

To examine the central hypothesis, I conducted an independent *t*-test analysis of the data. Results of the *t*-test analysis indicate whether or not there was a difference between the experimental and control groups in terms of student perception of teaching presence. *Table 5* shows these results.

Table 5

*Independent-Sample t-Test: Validation of homogeneity of variance for text-based and video-based groups on Teaching Presence Scale.*

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		<i>F</i>	<i>p</i>	<i>t</i>	<i>df</i>	<i>p</i>	MD	SED	CI – 95%	
									Lower	Upper
Su scale: Design and Organization	EVA	2.327	.131	-1.38	81	.172	-1.304	.947	-3.188	.580
	EVNA			-1.35	69.404	.181	-1.304	.965	-3.229	.621
Subscale: Facilitation	EVA	6.772	.071	-2.30	81	.024 *	-3.247	1.411	-6.054	-.440
	EVNA			-2.23	64.967	.029	-3.247	1.456	-6.155	-.339
Subscale: Direct Instruction	EVA	.592	.444	-.644	81	.521	-.441	.684	-1.802	.921
	EVNA			-.636	71.536	.527	-.441	.693	-1.823	.941
Teaching Presence: Total score	EVA	2.940	.090	-1.67	81	.094	-4.9917	2.944	-10.8508	.86740
	EVNA			-1.66	68.385	.102	-4.9917	3.010	-10.9976	1.0141 7

\* - Significance detected at .05 level.

MD = Mean Difference

SED = Standard Error Difference

CI-95% = 95% Confidence Interval of the Difference

EVA = Equal Variances Assumed

EVNA = Equal Variances Not Assumed

An independent-samples *t*-test was conducted to compare student perceptions of teaching presence in the experimental group in which weekly announcements were delivered via video and the control group which received text-based weekly announcements. There was no significant difference between the scores for the experimental group ( $M=56.94$ ,  $SD=12.30$ ) and the control group ( $M=51.94$ ,  $SD=14.50$ );  $t(-1.67)=81$ ,  $p=0.94$ , n.s. The research results did not show that the announcement delivery method had an effect on student perception of teaching presence in an online learning environment. Specifically, our results suggest that students who received video-based announcements did not experience a higher level of teaching presence than students who received only text-based weekly announcements during the online course work.

However, significant independent-samples *t*-test results were found for the one of the teaching presence subscales. There was a significant mean difference for the scores obtained from the TPS subscale Facilitation. Differences were found between the experimental ( $M=26.19$ ,  $SD=5.67$ ) and the control group ( $M=22.94$ ,  $SD=7.20$ );  $t(-2.30) = 81$ ,  $p = 0.024$ . This significance was present at the 95% and 99% level of confidence. For the other two TPS subscales (Design and Organization and Direct instruction), independent-samples *t*-test analysis did not show any differences between the groups' responses.

Overall, the research results regarding student perceptions of teaching presence did not support the main study hypothesis that students who are assigned to the group with video-based announcement delivery (experimental group) would score higher on the CoI/TPS Survey than students from the control group. Thus, the prediction for hypothesis one was rejected. Even though the overall results did not support my expectations, it would be remiss to neglect the significant difference between the groups' scores on the TPS subscale Facilitation. This result may reflect instructional characteristics (or purpose) of the video delivery method in the virtual environment and may provide better insight into the purpose of video announcements. This will be broadly discussed in the following chapter.

### **Student Engagement in Coursework**

The second research question asked if there was a difference in student course engagement between groups of students who view introductory announcements delivered as text or asynchronous video. To analyze this question, I present the percentage, mean score, and

standard deviation for both groups: Experimental and Control. I also conducted an independent *t-test* analysis of the data. The null hypothesis for the second research question was “There will be no significant differences in the frequency of reviewing the introductory messages, submission dates for assignments, and final course scores among students in the experimental and control group.” The expectation regarding the effect of intervention on this independent variable was that students who were assigned to the introductory video study group would have a lower frequency of reviewing the introductory messages and a shorter time of assignment submission than students assigned to the group in which announcements were delivered in textual format.

### **Descriptive Analysis: Frequency of Reviewing Announcements and Length of Assignment Submission**

Data regarding the frequency of students reviewing the announcements and the length of assignment submission were obtained through Blackboard statistical tools for tracking student online course activities. Data were obtained for all participants (experimental and control group) involved in this study without exception. Statistical values were carefully collected on a weekly basis and recorded in purposefully designed protocols labeled as the Frequency of Reviewing Announcement Protocol (*FRAP*) and the Assignment Submission Protocol (*ASP*). Therefore, with a 100% rate of data collection, I successfully conducted the statistical test with no missing data for these two independent variables. In the tables below (*Table 6* and *Table 7*), descriptive

statistical values (Mean, Standard Deviation and Std. Error) are provided for the frequency of students reviewing the announcements and the length of assignment submission.

*Table 6.*  
*Group Statistics: Frequency of reviewing announcements*

	GROUP	N	Mean	Std. Deviation	Std. Error Mean
Frequency of reviewing announcements	Control	40	35.90	17.541	2.773
	Experimental	47	32.94	15.695	2.289

With regard to the frequency of students reviewing announcements, the statistical results show that the mean value for the experimental group is lower ( $M=35.90$ ,  $SD=17.541$ ) than for the control group ( $M=32.94$ ,  $SD=15.695$ ). The mean value shows how many times a single student reviewed the announcement messages for the entire semester. There were 15 announcement messages in the Insect Biology (ENTO 115) course during the 2010 spring semester. Each week, one announcement was posted on Blackboard. The statistical analysis shows that on average, each student in the experimental group reviewed video announcements 2.4 times per week, while students who were assigned in the control group reviewed text-based announcements 2.2 times per week.

*Table 7.*  
*Group Statistics: Length of assignment submission*

	GROUP	N	Mean	Std. Deviation	Std. Error Mean
Length of assignment submission	Control	40	-68.2051	20.91861	3.34966
	Experimental	47	-63.8936	29.19443	4.25844

The mean value for the length of assignment submission reflects the number of days that passed between the first time the student reviewed the announcement for a specific course assignment and the date of assignment submission. There were ten major assignments and the mean value provided in *Table 6* shows the total number of days (length of assignment submission) that students used to work on all 10 assignments. The obtained data indicates a slight difference in the mean value between two groups: experimental group ( $M=68.21$ ,  $SD=20.10$ ); control group ( $M=63.84$ ,  $SD=29.20$ ). A student in the experimental group submitted the average assignment 6.8 days after reviewing the assignment announcement, while a student in the control group needed 6.4 days to submit the same assignment to the online course instructor.

#### **Student Engagement and Announcement Delivery Method: t-Test Findings**

An independent *t-test* was computed to compare the frequency of students reviewing the announcements and the length of assignment submission in the experimental and control groups. Based on the *t-test* results, I examined the hypothesis regarding student course engagement in online coursework. The following hypothesis was proposed: Students who were assigned to the introductory video study group will have a lower frequency of reviewing the introductory messages and a shorter length of assignment submission than students assigned to the group in which announcements are delivered in textual format.

**Frequency of reviewing announcements.** Table 8 shows the *t-test* value for the frequency of reviewing announcements. The finding indicates that there was no significant difference in the scores for the experimental group ( $M=32.94$ ,  $SD=15.70$ ) and the control group ( $M=35.90$ ,  $SD=17.54$ );  $t(85) = .832$ ,  $p = .408$ , n.s.



Table 8.

*Independent-Sample t-test Validation of Homogeneity of Variance for Text-based and Video-based groups on Frequency of Reviewing Announcements.*

	Levene's Test for Equality of Variances		t-test for Equality of Means						
	<i>F</i>	<i>p</i>	<i>t</i>	<i>df</i>	<i>p</i>	MD	SED	CI – 95%	
								Lower	Upper
Equal Variances Assumed	.048	.827	.832	85	.408	2.964	3.564	-4.122	10.050
Equal Variances Not Assumed			.824	79.112	.412	2.964	3.596	-4.194	10.122

MD = Mean Difference

SED = Standard Error Difference

CI-95% = 95% Confidence Interval of the Difference

The research results showed that the announcement delivery method does not have an effect on the frequency of reviewing weekly introductory announcements. Specifically, study results suggest that students who received video-based announcements did not review the announcements significantly less than students who received text-based announcements, although I had expected this finding.

**Length of time for assignment submission.** To provide an answer to research question two, I had to conduct an independent-sample *t-test* analysis to compare the length of student assignment submission in the experimental and control groups. The results are shown in Table 9.

Table 9.

*Independent-Sample t-test Validation of Homogeneity of Variance for Text-based and Video-based groups on the Length of Assignment Submission*

	Levene's Test for Equality of Variances		t-test for Equality of Means						
	<i>F</i>	<i>p</i>	<i>t</i>	<i>df</i>	<i>p</i>	MD	SED	CI – 95%	
								Lower	Upper
Equal Variances Assumed	5.443	.022	-.772	84	.442	-4.31151	5.58446	-15.41682	6.79379
Equal Variances Not Assumed			-.796	82.364	.428	-4.31151	5.41799	-15.08890	6.46588

MD = Mean Difference

SED = Standard Error Difference

CI-95% = 95% Confidence Interval of the Difference

There was no significant difference between the scores for the experimental group ( $M = -63.98$ ,  $SD = 29.319$ ) and the control group ( $M = -68.21$ ,  $SD = 20.92$ );  $t(-.772) = 84$ ,  $p = .442$ , n.s.

The research results showed that the announcement delivery method does not have an effect on the length of assignment submission during online coursework. Specifically, these results suggest that students who received video-based announcements did not spend significantly less time working on their assignments than students who used text-based announcement forms.

However, it should be noted that computing independent *t-test* analysis for the length of assignment submission does not meet the basic assumptions for conducting *t-test* analysis. According to Gravetter and Wallnau (2004), the following three assumptions should be satisfied before computing an independent *t-test* for hypothesis testing: a) the observation in each sample must be independent, b) the population from which two samples are drawn must be normal, and c) the two selected samples must have equal variances; that is, a homogeneity of variances (Gravetter & Wallnau, 2004, p. 330). In this case, the first two assumptions (independency and normality) were satisfied even though the assumption regarding the equality of variances was not met. I conducted Levene's test ( $p = .022$ ) which showed that variances across the groups were not similar. The value for Levene's test indicating an acceptable level of homogeneity of variances should be greater than .05 ( $p > .05$ ). Thus, the assumptions for the independent *t-test* were not met, and in this case, I must discard all findings regarding the length of assignment submission.

In summary, the obtained results cannot support the study hypothesis that students who were assigned to the group with video-based announcement delivery (the experimental group) would be more engaged in online course activities than students in the control group. Thus, I

rejected the prediction of hypothesis #2. Nevertheless, it is interesting to point out that even though hypothesis #2 was rejected, the mean value for student engagement shows that there is a trend of students assigned to the experimental group being slightly more engaged in course activities compared to students in the control group.

### **Student Performance**

Student performance was the third issue I was interested in. Specifically, I wanted to explore and provide an answer to the following question: Is there a difference in student performance between groups of students in online courses where introduction is delivered in textual format and students who receive introductions via asynchronous videos? The indicators of student performance were the level of announcement content recall and total course points at the end of the semester. To answer this question, I computed an independent *t-test* analysis of the data and present the percentage, mean score, and standard deviation for both study groups. Also, the following null hypothesis was proposed: “There will be no significant differences in the level of recall of the announcement content and final course scores between students in the experimental and control groups.” It was expected that the research intervention would help students who were assigned to the introductory video study group score higher on the set of questions aimed at assessing their level of recall of the announcement content. Also, it was expected that the students who received video-based announcements would have better overall course points at the end of the class.

#### **Descriptive Analysis: Level of Announcement Recall and Final Course Points**

Different methods and research instruments were utilized for measuring student performance. Data about the level of student announcement recall were gathered via a purposefully designed questionnaire titled the Announcement Content Recall Questionnaire

(ACRQ). The ACRQ consists of several items aimed at measuring how much students can recall from the content of the announcement. The ACRQ was administered twice, in the third and eighth week of the semester. The measurement findings are provided in *Table 10*.

*Table 10.*  
*Group Statistics: Level of announcement recall*

	GROUP	N	Mean	Std. Deviation	Std. Error Mean
First Recall Test	Control	37	3.78	1.357	.223
	Experimental	44	4.43	1.208	.182
Repeated Recall Test	Control	37	4.65	.633	.104
	Experimental	45	4.58	.723	.108
Total Recall	Control	37	8.43	1.659	.273
	Experimental	43	9.00	1.528	.233

The obtained results for the first ACRQ show that the mean value for the experimental group is higher ( $M=4.43$ ,  $SD=1.208$ ) than the mean for the control group ( $M=3.78$ ,  $SD=1.357$ ).

The mean value indicates student success on the recall questionnaire; in other words, in the amount of correct answers per student. However, for the repeated ACRQ, the mean value changed in slight favor to the control group ( $M=4.65$ ,  $SD=.633$ ). The mean value for the experimental group was  $M=4.58$  and  $SD=.723$ . The results indicate that the experimental group performed better in the first testing, while in repeated testing, students from the control group achieved slightly higher test scores. Altogether, the mean value for the ACRQ shows that students from the experimental group had better announcement content recall performance: experimental group: ( $M=9.00$ ,  $SD=1.528$ ) and control group: ( $M=8.43$ ,  $SD=1.659$ ).

Data regarding students' final course points were acquired through the Blackboard grade book tool. This type of data was obtained for all participants (experimental and control groups) involved in this study without exception. Overall course points were collected at the end of the semester and they include student achievement on all course assignments as well as the final test.

Data from the grade book were recorded in purposefully designed protocols labeled the Final Points Protocol (FPP). The table below (*Table 11*) provides the descriptive statistical values (Mean, Standard Deviation and Std. Error) for the students' final course points.

*Table 11*  
*Group Statistics: Final course score*

	GROUP	N	Mean	Std. Deviation	Std. Error Mean
Final_score	Control	40	573.7688	72.00604	11.38515
	Experimental	47	576.8351	97.27712	14.18933

The mean value for students' overall points shows that there are no major differences between the two groups. The mean value for the control group was  $M=573.7688$ ,  $SD=72.00604$ , while in the experimental group, the mean was  $M=576.8351$ ,  $SD=97.27712$ . These data indicates that students in the experimental group achieved slightly higher overall course points than students in the control group.

### **Student Performance and Announcement Delivery Method: *t*-Test Findings**

An independent *t*-test analysis (95% level of confidence) was computed to compare student performance in the experimental and control groups. Student performance was measured through the level of announcement content recall and overall course points earned during the 2010 spring semester. Based on the *t*-test findings, I examined the proposed hypothesis regarding student performance in course activities.

**Announcement Recall.** To examine if there was a difference in the student level of announcement content recall in the experimental group whose weekly announcements were delivered via video and the control group that received announcements in textual format, I

computed an independent  $t$ -test.  $T$ -test findings are summarized in the table provided below (Table 12).

Table 12

Independent-Sample  $t$ -test Validation of Homogeneity of Variance for Text-based and Video-based groups on *Announcement content recall questionnaire – First measurement*.

	Levene's Test for Equality of Variances		$t$ -test for Equality of Means						
	$F$	$p$	$t$	df	$p$	MD	SED	CI – 95%	
Equal Variances Assumed	.368	.546*	-2.273	79	.026*	-.648	.285	-1.22	-1.22
Equal Variances Not Assumed			-2.250	72.894	.027	-.648	.288	-1.222	-.074

\* - Significance detected at .05 level.

MD = Mean Difference

SED = Standard Error Difference

CI-95% = 95% Confidence Interval of the Difference

There was a significant difference in the level of announcement content recall for the experimental group ( $M=4.43$ ,  $SD=1.208$ ) and the control group ( $M=3.78$ ,  $SD=1.357$ );  $t (-2.273)$   $=79$ ,  $p = .26$ . The significance was found at the .05 level of confidence. The research results from the first ACRQ showed that the announcement delivery method had an effect on student content recall in an online learning environment. Specifically, the results suggest that students who received video-based announcement could recall more announcement content than students who received announcement content in textual format. In other words, students in the experimental group answered an average of 4.43 questions correctly out of six, while students in the control group were able to provide only an average of 3.78 correct answers on the Announcement Content Recall Questionnaire.

However, a repeated measurement of student announcement content recall that took place five weeks after the first testing had quite a different result. The value of the computed independent sample *t*-test showed that no significant differences between the two groups. The obtained independent *t*-test findings are summarized in the table below (*Table 13*).

*Table 13*

Independent-Sample *t*-test Validation of Homogeneity of Variance for Text-based and Video-based groups on *Announcement content recall questionnaire – Repeated measurement*.

	Levene's Test for Equality of Variances		<i>t</i> -test for Equality of Means						
	<i>F</i>	<i>p</i>	<i>t</i>	df	<i>p</i>	MD	SED	CI – 95%	
Equal Variances Assumed	1.091	.299	.467	80	.642	.071	.152	-.231	.373
Equal Variances Not Assumed			.473	79.653	.637	.071	.150	-.227	.369

MD = Mean Difference

SED = Standard Error Difference

CI-95% = 95% Confidence Interval of the Difference

There was no significant difference in the level of announcement content recall for the experimental group ( $M=4.58$ ,  $SD=.723$ ) and the control group ( $M=4.65$ ,  $SD=.633$ );  $t(.467)=80$ ,  $p=.642$ . The research results from the second ACRQ showed that the announcement delivery method did not affect student performance regarding the memorization of content provided via weekly course announcements. It is noteworthy that the values of the means and standard deviations as well as the magnitude of the change for each of the two groups were very similar. Thus, the results suggest that students who received video-based announcements and students

who received announcements in textual format had basically the same level of announcement content recall. No difference between the groups was found.

Finally, an independent sample *t*-test was computed for the all the questionnaire items together (items included in the ACRQ #1 and the ACRQ #2). The results of this analysis are presented in *Table 14*.

*Table 14*  
Independent-Sample *t*-test Validation of Homogeneity of Variance for Text-based and Video-based groups on *Announcement content recall questionnaire – Total scores*.

	Levene's Test for Equality of Variances		<i>t</i> -test for Equality of Means						
	<i>F</i>	<i>p</i>	t	df	<i>p</i>	MD	SED	CI – 95%	
								Lower	Upper
Equal Variances Assumed	.622	.433	-1.592	78	.115	-.568	.356	-1.277	.142
Equal Variances Not Assumed			-1.582	73.950	.118	-.568	.359	-1.282	.147

MD = Mean Difference

SED = Standard Error Difference

CI-95% = 95% Confidence Interval of the Difference

This independent-sample *t*-test analysis showed that there was no significant difference between the groups regarding the level of announcement content recall. The mean value for the experimental group was  $M=9.0$ ,  $SD=1.528$  and for the control group was  $M=8.43$ ,  $SD=1.659$ ,  $t(-1.592)=78$ ,  $p = .115$ , n.s. Based on the obtained data from both recall tests, the research findings showed that students from both groups remember almost the same amount of information from weekly course announcements. It should be highlighted that although the overall findings for the



announcement recall test did not show any differences between the groups, the results from the first recall testing are significant.

**Final course points.** Final course points were one of two indicators of student performance. To compare the two groups in terms of overall achievement, I conducted another independent-sample *t*-test. *Table 15* provides an overview of the results based on *t*-test analysis.

*Table 15*

Independent-Sample *t*-test Validation of Homogeneity of Variance for Text-based and Video-based groups on *Final course points*.

	Levene's Test for Equality of Variances		<i>t</i> -test for Equality of Means						
	<i>F</i>	<i>p</i>	<i>t</i>	df	<i>p</i>	MD	SED	CI – 95%	
Equal Variances Assumed	.368	.546	-.165	85	.870	-3.06636	18.62994	-40.10767	33.97496
Equal Variances Not Assumed			-.169	83.483	.867	-3.06636	18.19227	-39.24695	33.11424

MD = Mean Difference

SED = Standard Error Difference

CI-95% = 95% Confidence Interval of the Difference

There was no significant difference between the final course points for the experimental group ( $M=576.84$ ,  $SD=97.28$ ) and the control group ( $M=573.77$ ,  $SD=72.00604$ );  $t(-.165)=85$ ,  $p=.870$ , n.s. The research results showed that the announcement delivery method did not have an effect on students' overall course scores at the end of the semester. Specifically, results suggest that students who received video-based announcements did not achieve significantly higher overall course points compared to students who received announcements via the traditional format (i.e., via text).

In summary, the obtained results cannot support the study hypothesis that students who were assigned to the group that received video-based announcements (the experimental group) would have better performance on coursework assignments and activities compared to students in the control group. Therefore, I had to reject the prediction for hypothesis #3, which stated that “Students who were assigned to the introductory video study group would score higher on the set of questions aimed at assessing the level of recall of the announcement content, and higher overall assignment scores at the end of the semester.” However, it would be remiss not to note that a significant *t*-test result was obtained from the first ACRQ, and this finding may be a very interesting discussion issue from the instructional design theoretical standpoint. In the following chapter, this result will be interpreted in detail, and compared and contrasted with findings from similar studies.

## **Teaching Presence, Engagement and Performance Model: SEM - Multiple**

### **Group Analysis**

In addition to the main purpose of this study, exploring the role of video delivery in developing teaching presence, my intent was to see if and to what extent the proposed Teaching Presence, Engagement and Performance model (TPEP) would be equivalent across the experimental and control groups of students. The underlying TPEP model assumption was that teaching presence (TP) in online courses would be related to student course engagement (SE) and student performance (SP). This multivariate relationship between latent constructs TP, SE

and SP was a subject of research interest because the study intervention aimed to enhance student perceptions of teaching presence by using different delivery media.

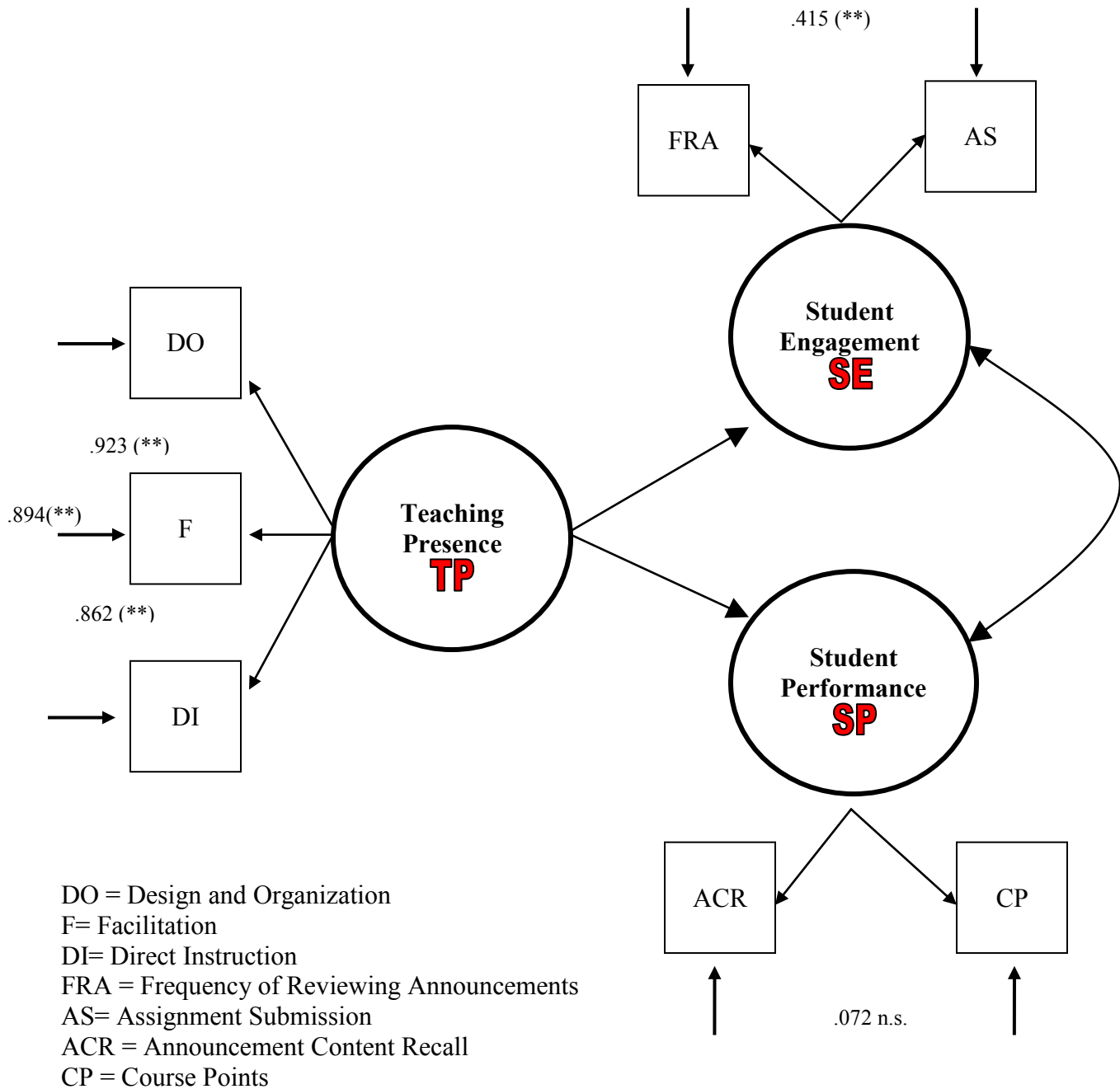
The present study used a Structural Equation Modeling (SEM) to verify the hypothesized TPEP model. Specifically, a SEM - Multiple Group Analysis was conducted to test whether or not the TPEP model would be the same in the two research groups. In this study a confirmatory modeling approach was used to assess whether the proposed TPEP model would be relevant for the given online learning environment. The SEM - Multiple Group Analysis in this study deals with two types of variables: measured and latent variables. Measured variables (or indicators) are observed and measured directly. Latent variables (or factors) are inferred from measured variables. The Multiple Group Analysis was calculated from variance and covariance matrices and the statistical test was conducted with MPlus Software.

A full factorial model of multivariate analysis, as presented in *Figure 4.7*, includes the following observed and latent variables: Design and Organization (DO), Facilitation (F), Direct Instruction (DI), Frequency of Reviewing Announcements (FRA), Assignment Submission (AS), Announcement Content Recall (ACR), Course Points (CP) as observed variables and Teaching Presence (TP), Student Engagement (SE) and Student Performance (SP) as latent variables.

Figure No. 4.7.

Theoretical model: Teaching Presence, Engagement and Performance Mode - TPEP

N=84



\*\* Correlation is significant at the 0.01 level

\* Correlation is significant at the 0.05 level

The goodness-of-fit of the proposed TPEP model was evaluated using absolute indices.

The following absolute goodness-of-fit indices were calculated: a) the Chi-square ( $\chi^2$ ) goodness-of-fit test; b) the Root Mean Square Error of Approximation (RMSEA); and Comparative Fit Index (CFI/TLI). According to Foster, Barkus, and Yavorsky (2006), a model fit refers to the discrepancy between the observed covariance structure and the one implied by the hypothesized (TPEP) theoretical model. It should be noted that a good-fitting model is not necessarily a relevant model for the given setting.

In the present study, the proposed TPEP model fits the data well. The test for goodness-of-fit was conducted for the overall sample and for the sample with the experimental and control groups. For the entire sample, all the tests of fitness (Chi-square, RMESA, and CFI) were within the range of acceptable values (Chi-square  $\chi^2 = 11.047$ ,  $df = 8$ ,  $p = 0.1990$ ; RMESA = 0.323; CFI = 0.989 / TLI = 0.980). The test of model fitness showed similar results with both study groups. The conducted fitness analyses of the proposed TPEP model with the groups fit the data well. The following fit index values were found: Chi-square  $\chi^2 = 16.832$ ,  $df=18$ ,  $p = 0.5347$ ; RMESA = 0.133; and CFI = 1.000 / TLI = 1.006.

In an SEM analysis, a nonsignificant value of  $\chi^2$  indicates that the proposed TPEP model fits the data ( $p>0.05$ ). Basically, the Chi-square ( $\chi^2$ ) test of fitness is used here to evaluate the null hypothesis and to show that the difference between the observed and predicted model matrices is zero. Typically, researchers (Lin & Dembo, 2008; Salanova & Schaufeli, 2008) have pointed out that the Chi-square ( $\chi^2$ ) test of model fitness has certain limitations. Although it is

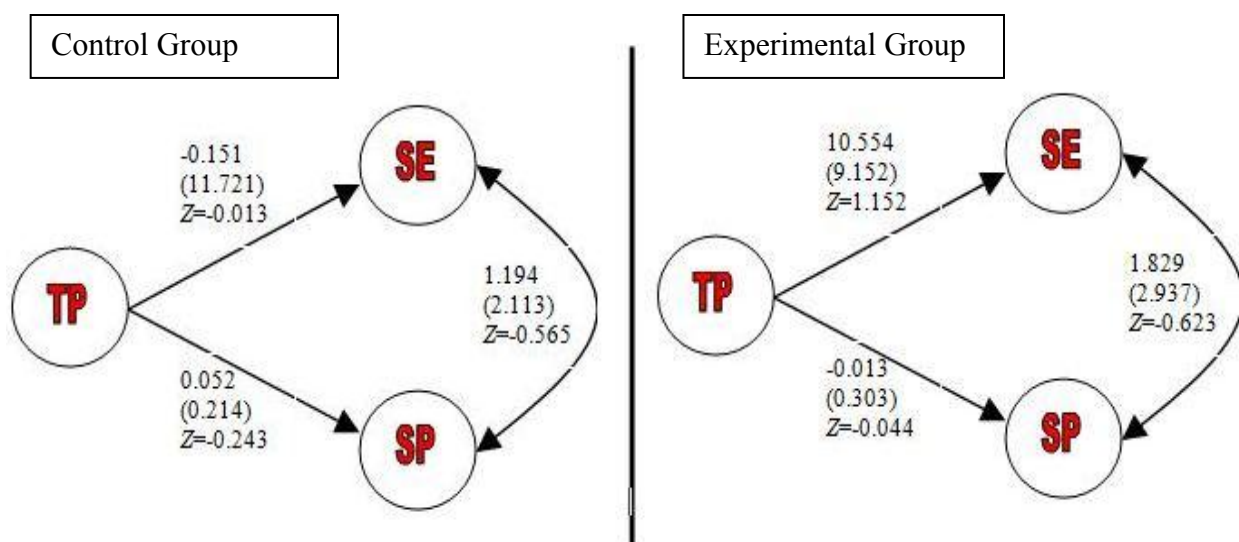
traditionally used to report goodness-of-fit, the Chi-square ( $\chi^2$ ) is sensitive to sample size, and thus the probability of rejecting a hypothesized model increases when the sample size increases. However, conducting the Chi-square ( $\chi^2$ ) test for validating model fitness is appropriate in this research because the sample size is relatively small ( $N=84$ ). With regard to the two other tests of model fitness, Hu and Bentler (1999) have suggested that that CFI and RMSEA index ranges from 0 to 1. A larger value of the CFI indicates a better model fit. An acceptable value for the CFI is greater than 0.90. In the present study, the CFI index was very high, which indicates that the TPEP model fit the data well. The CFI measures how much better the given model fits the data compared to the independent ideal model (Bentler, 1990). If the CFI value is 1, it means that the proposed model matrices would be the same in the overall population. Finally, the result of the RMSEA test yielded a range of acceptable values. According to Hu and Bentler (1999), the RMSEA value should be 0.06 or less. A value greater than 0.1 would indicate that the examined model should be rejected due to poor fitness value. The RMSEA is a measure of fit that could be expected if the current TPEP model was estimated from the entire population instead of a study sample drawn for estimation (Browne & Cudeck, 1993, p. 144).

The next step was to examine if and to what extent the proposed TPEP model would be equivalent across the experimental and control groups of students. A path analysis was conducted between the latent TP, SE and SP constructs. The performed path analysis showed that none of the path coefficients within the hypothesized model were significant in both research

groups of students. The value of the path coefficients should be higher than 1.96 ( $z > 1.96$ ). The obtained data are presented in the *Figure 4.8* below.

*Figure 4.8.*

Path analysis results: TPEP model



The obtained results suggest that the latent variable Teaching Presence (TP) does not predict Student Engagement (SE) in course activities and Student Performance (SP) in both the control and experimental groups of students. Also, the findings showed that the mutual relationship between Student Engagement (SE) and Student Performance (SP) in both subsamples (control and experimental groups) was not significant. In other words, this research study did not confirm the existence of an interrelationship between the factors in the hypothesized TPEP model.

There are several reasons that may explain the insignificant path analysis results. One of the greatest limitations in this study is its limited sample size. SEM - Multiple Group Analysis includes statistical tests that are very sensitive to sample size and to the magnitude of difference in the covariance matrices of the proposed model. Most authors have argued that the sample size for conducting SEM should be higher than 200. For instance, Loehlin (1992) and Hoyle (1995) suggested that an adequate sample size include at least 100-200 cases. Furthermore, Schumacker and Lomax (2004) recommended a sample size of 250-500 participants. Based on a comprehensive literature review regarding sample sizes when conducting SEM analyses, a sample size of less than 100 is considered too small for SEM analysis. With this in mind, it should be pointed out that the sample size in the current research study was 84 (N=84), which is not likely to be sufficient for conducting the SEM analyses. The inadequate sample size is the likely reason that insignificant results were obtained. Another possible reason may be a structural or residual error. A residual error refers to the unexplained variances that can appear in the proposed model, which can influence observed variables. In other words, a residual error reflects the effect of all factors beyond the controlled research environment that could not be measured by the researcher. Finally, it may also be possible that my assumption regarding the theoretical model was incorrect.

### **Qualitative Inquiry Findings**

The purpose of the data obtained from the qualitative inquiry was to provide additional understanding of the students' perception of teaching presence and the announcement delivery method. The qualitative findings helped me grasp a deeper insight into issues that were difficult to measure with quantitative instruments. The student responses in semi-structured interviews added an additional layer of complexity and richness to the present study. Without qualitative



data, a *big picture* of the role of delivery media in developing teaching presence would be incomplete. Qualitative study results are organized and interpreted as follows: description of participants and setting, development of issues, perspectives, and meta-theme.

### **Participants and Settings**

The sample size for the qualitative inquiry consisted of three randomly selected students from each of the two groups. Thus, six students were interviewed in total. Students were selected based on their overall course points: low achievers (C), average (B), and high achievers (A). Students' participation in interviews was on a volunteer basis. Interviewing took place in a conference room located at the Department of Entomology after the final course exam. For their participation in the interview, students were given a \$5 gift card. In addition, a semi-structured interview was conducted with the course instructor.

In order to assure anonymity, the names of the students were replaced by pseudonyms: Tom, Jill, Jack, Patty, Larry, and Michael. Other than their names, the students were not asked to provide any personal information. All of the study participants in this phase were aged between 20 and 30 years old and were born and raised in Lincoln, Nebraska. All of the participants were very cooperative and willing to give detailed answers to the interview questions. Five out of six participants reported that they had some experience with an online learning environment, while one student had completed five online courses. In general, all six participants had had positive experiences with an online learning environment before they enrolled in the Insect Biology (ENTO 115) course. With regard to students' computer and software proficiency, each of the interviewees indicated having a considerable level of computer skills and competency and that

they were confident in using the course delivery platform and other required applications (e.g., Quick Time video player).

The Learning Management System (LMS) Blackboard was used as a course delivery platform. Blackboard primarily served to provide readings, assignments, and grading, as well as storage for the supplemental instructional materials such as narrated Power Point slide presentations. Insect Biology (ENTO 115) was conducted as an entirely online course except for the final exam, which was administered using a traditional assessment in face-to-face format. The course consisted of six modules and ten major assignments. The course was well-organized and the instructor maintained frequent communication with students via email and continuous feedback on their assignments. As a part of the pre-course requirements, students enrolled in Insect Biology (ENTO 115) needed to pass a tutorial on how to use LMS Blackboard courseware. Before the official start of the coursework, students also received detailed instructions on how to use instructional materials, including video announcements. In addition, to assure that all students would be able to effectively use the online course delivery system and the instructional sources, the course instructor sent out an email to all the students that included a comprehensive list of technology requirements needed for online course participation.

Finally, the Department of Entomology has a well-developed ICT infrastructure and solid technical support. More specifically, the Department of Entomology has broad bandwidth, including wireless internet access in all its facilities throughout the entire campus, numerous computer labs with both PC and Mac OS X platforms, and classrooms equipped with mainly desktop computers, audio systems, and smart boards. Overall, modern educational technology

has been fully integrated into the teaching environment and instructors and students have few if any limitations regarding access to media, hardware, or software.

### **Development of Issues**

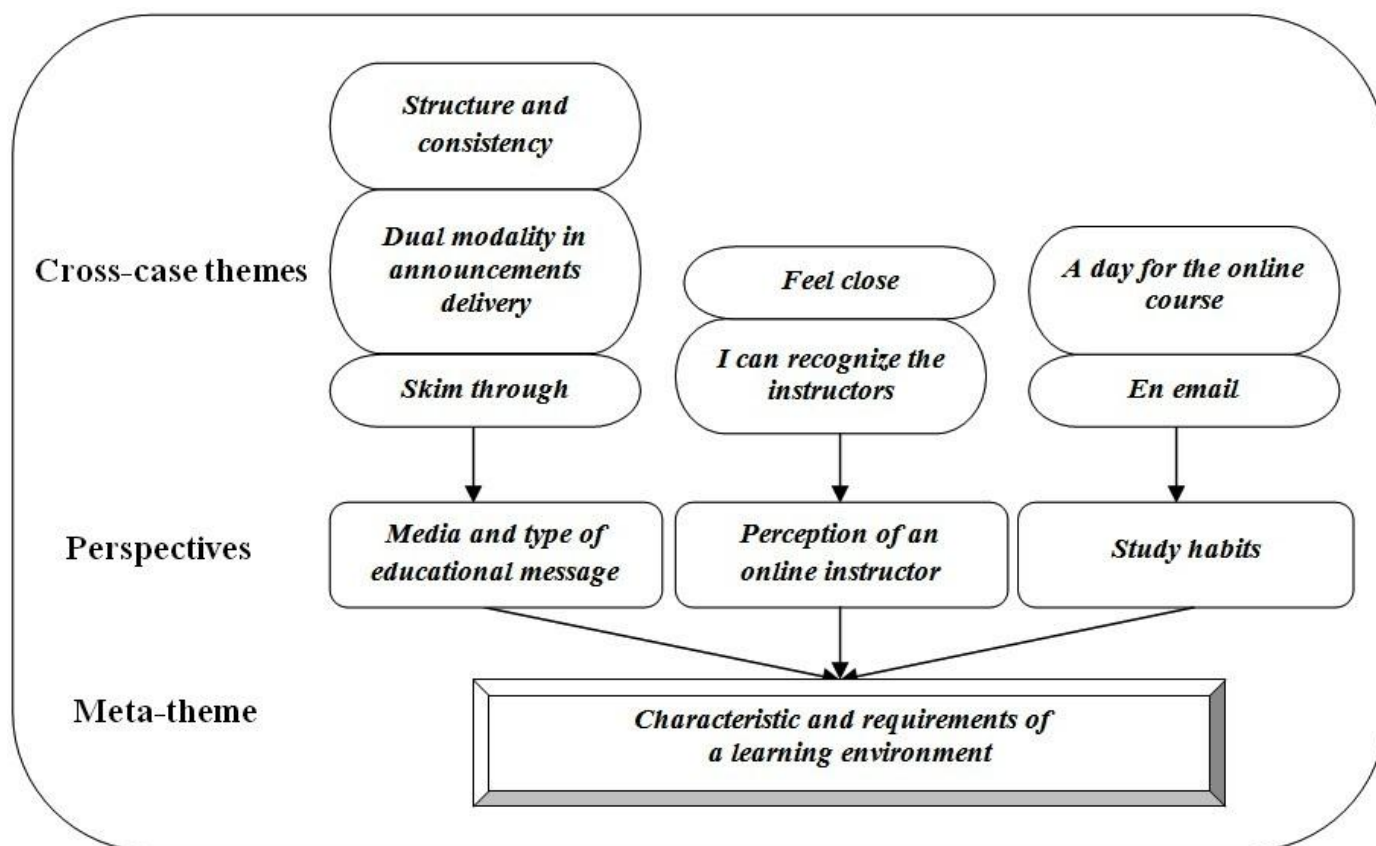
To better understand the student perception of teaching presence, I conducted a qualitative analysis of data by comparing and contrasting student response patterns across the themes for each participant. As a result of their interview responses, I enriched my ideas and expanded my ways of thinking about the role of delivery media in developing teaching presence in an online learning environment. I have developed and presented my insights about the issues that were explored through cross-case themes. I summarize these insights in the form of more general perspectives. Finally, my analysis of qualitative data resulted in one meta-theme that represents overarching implications that may be relevant from the instructional design standpoint. Cross-case themes, perspectives, and a meta-theme provide a more practical understanding of the challenges that online instructors and designers face.

With regard to the explored issues in this study, seven cross-case themes emerged: *Structure and consistency*, *Dual modality in announcements delivery*, *Skim through*, *Feel close*, *I can recognize the instructor*, *A day for the online course*, and *Email use*. Each theme reflects a specific issue highlighted by the interviewees as an important element for understanding the link between delivery method and teaching presence. Considering that *in vivo coding* was the approach that was utilized, each cross-case theme was based on the participants' original phrases and expressions from interview transcripts. This was done in order to preserve the authenticity of meaning and students' language. Additionally, each emergent cross-case theme is supported by quotes. Developed cross-case themes are summarized in three broader perspectives, as follows: *Media and type of educational message*, *Perception of an online instructor*, and *Study*

*habits*. Altogether, the overall implications of qualitative results were outlined in the meta-theme labeled as: *Characteristic and requirements of a learning environment*. A graphical model of qualitative findings is presented in the figure below (Figure 4.8.)

Figure 4.8

Development of the qualitative issues: Flow chart



**Structure and consistency.** Structure and consistency was the first and most obvious theme that emerged from my qualitative analysis. In response to my question, “What about weekly introductory announcements... were they helpful to you as a distance student in the online environment?” all of the students without exception pointed out that well-structured online activities and a consistency in the delivery of instructional materials was extremely

helpful for online coursework. Similar responses regarding the importance of course structure and consistency were present in responses in both the video- and text-based research groups. For example, Tom reported that

”This was one of the most integrated online experiences I had... this entomology course. It was easy to navigate, very clear and with a good structure ... what was really helpful. I did not have any problems. I could find everything I needed. The announcements were very straightforward; they were simple and direct, just to the point which is nice. They broke it up to the nice little portions.”

Undoubtedly, Tom’s answer reflects the critical aspect of successful online teaching and the best practice in using video/text announcements as a part of instructional teaching strategy. For online students enrolled in Insect Biology (ENTO115), it was very important to know *where* and *when* they could find information regarding the course activities, assignments, and due dates. Another interviewee, Jack, brought up the following comments that strongly advocate for having a solid structure and consistency in the announcement delivery:

“Every Monday the teacher would come on. She would just show up in a video format talking to us. I thought overall she told us exactly what we needed to do for the week. She told us what we should have completed for the previous week, what we will be doing this week, and what we should be looking forward to upcoming weeks. It was easy to follow because information were presented in a very simple way... well organized and structured. It was clear, it was concise. It was just right; the instructor covered all bases, nothing more, nothing less. I know exactly what was expected from

me, both in the present and the future of the class. Without announcement it would be hard to keep on track.”

The quotes presented above, among others, describe the necessity of having an established structure of online course activities and instructor-student interaction. Also, as pointed out by many interviewees, consistency in the delivery of instructional materials, including video/text announcements, positively influenced the organizational aspect of the coursework and diminished the level of student anxiety imposed by the depersonalized online learning approach.

**Dual modality in announcements delivery.** An interesting theme emerged from my interviews with students in both groups, a theme that may offer a direction for designing a more instructionally effective announcement. This theme is even more important considering that my interview questions did not explicitly ask students about their opinions regarding dual modality in announcement delivery. Students from both research groups suggested that it would be particularly useful if they received video accompanied with text and vice versa. Larry, who received video announcements, told me:

“I did like the video announcements....but personally I would like to have text along with the videos. It may be easier to find the information”.

Another student, Jill, recognized that video messaging would be an appealing addition to the text announcement. She valued text announcements more because its format gave better structure to the information, but she also argued that the nature of video announcements (that is, the possibility to see and hear the instructor) would keep her more on-task in terms of the course agenda. This student reported:

“Not every class has announcement section. It was really useful to have them. They helped me to stay on top of the stuff. But... I think... like that food class I took, the lectures were actually video, which was a bit more entertaining and interesting to follow.”

Altogether, students’ responses suggest that using multiple delivery media may enhance the effect of announcement messages. In other words, a combined text-and-video delivery method may compensate for the disadvantages of each delivery media when used alone. Also, this strategy was seen as an interesting way to include more multimedia content in online courses. When I asked the question: “Do you think that the best possible way for announcement delivery would be a combination of text and video?” all the participants provided positive answers.

In addition, it would be remiss not to note that even the course instructor felt that announcements delivered via combined text and video may be the best possible approach. The instructor suggested the following:

“I would make video announcements a bit shorter, just that they kind of see me each week and I am talking to them and they get that written email where they can read further and have more details”

**Skim through.** Based on the answers provided by the students who were assigned to the control group, I formulated an additional theme that is relevant only to text announcements. I labeled this theme using Jill’s words, “Skim through.” All of the students in the control group emphasized that text announcements were very convenient for locating important information in a short period of time. Jill described her impression about the text announcement as follows:

“I like to read a short briefing, you know... for example this week we are going to talk about your beetle corn assignment , so as you get to that lecture you will really know that you need to focus on *that*. So I really do not want a big prompt cause I would not probably read it. If I can skim through I actually prefer that. I want quickly to get what is important and then hit that assignment.”

Text formatting that includes cues seems to be an effective way to get students’ attention and point out the most important parts of announcements. One of the main advantages of text announcements is in how textual format displays information. In other words, headings, paragraphs, bullets, bold font, italic font, and in some cases even a different color explicitly show a critical part of the announcement message. Obviously, video announcements did not provide this advantage to students assigned to the experimental group. Due to the nature of video as a delivery medium, students were not able to just “skim through” the announcement message. For instance, Tom and Jack commented that they always wrote down the important due dates provided via video announcement and used those notes as a reminder afterwards. For these two students, video messaging was not so suitable for conveying information such as assignment due dates or reading references. They preferred to receive this type of information in textual format rather than as a video message.

**Feel close.** Perhaps the most interesting finding from the teacher presence standpoint was the frequently repeated statement that students felt very close to the online course instructor. The theme labeled Feel Close directly reflects the students’ impressions about the course instructors, which was dependent on the type of delivery media used in the online course. I asked the study participants how they felt after getting announcements from the instructor. Only the students who



received video announcements reported that they felt very close to the instructor. Also, the video announcement messages made the student-instructor interaction more personal and less alienating. All three of the students enrolled in the experimental group provided me with similar responses. For Michael, the advantage of video announcements had to do with the very nature of the asynchronous video.

“I liked it, I like it just because it was an online class, I still got a chance to see her. It was... I felt, it brought it up to more personal level rather than just like reading the emails. I liked it. I think that was a good idea.”

The response of another student, Patty, was intriguing in the way it linked a delivery method with the role of an online teacher. Undoubtedly, her comments prompted me to reconsider my ideas about what traits made a good teacher. She reported:

“I think that by seeing video, like actually seeing her I felt that was even not an online course, that it was more like ...even though I did not know her I felt like more that is more like teacher, because I would never otherwise have pretty much any interactions with her. Other than If I had a question about test or something but. .. It was nice to see her. It was make it more personal. I felt I was more comfortable going to her with a question than to send her an email”.

One more issue associated with the video announcement delivery method was highlighted by participants. Larry’s comments indicated that video-based interaction was useful for decreasing a transactional distance between participants in an online learning process. This also set the entire communication system on a much less formal level. Larry described this

situation as follows: “Email looks very formal but with video messages I did not have that impression.”

Altogether, according to the interviewees’ responses, feeling close to the online instructor was a unique experience that they attributed to the video announcement messages. In addition, all the three participants had never received this type of course announcement before. This may be one reason why they highly valued the video announcements provided in Insect Biology (ENTO115).

**I can recognize the instructor.** This theme, at the most straightforward level, indicates the link between students’ perception of the instructor and delivery media in an online course. This theme emerged from responses of students assigned to the experimental (video) group. Furthermore, this theme was confirmed through the inquiry conducted with the course instructor. Both the course instructor and the students who received video announcements acknowledged this implication of the research intervention as a worthy addition to the standard online learning/teaching experience. There was no evidence (statements, words, or phrases) from the student responses of the text-based group that could support this particular theme.

For these online students, being able to recognize the online instructor (in the university campus or in the departmental buildings) was absolutely new and unique. Typically, an online student spent the entire semester (15 weeks) in intensive communication with an instructor while having partial or no sense of what the instructor looked like, the tonality of his or her voice, or his or her personal temperament. Although the lack of visual/auditory representation of the instructor doesn’t necessarily affect the learning outcome, it certainly does affect the students’ impression of the entire online learning process and perception of the online instructor. Results from my qualitative inquiry support this assertion. However, my extensive database search

(Academic Search premier, PsycINFO, Primary Search, Business Source Premier and PsycARTICLES; from 1991 to 2010) failed to disclose research that shows that being able to see and hear the instructor affects learning outcomes.

Interviewees described the manner in which video announcements added this new dimension and quality to their online learning experience. For instance, Patty stated:

“I learn visually so I think it was helpful that I can actually like see her. And that every time that I come to lab or to take a test, even though I was not on her lecture, I could acknowledge her and say Hi. I really like that a lot.”

These quotes were confirmed and empowered by the response provided by the Insect Biology (ENTO 115) course instructor. The course instructor reported that students greeted her more frequently in the department hallways while being sure about his/her identity. The instructor stated:

“The one thing that I’ve noticed about the video was that students recognized me, you know. Normally they will come to the building and if they were 115 students, and before when they just heard my voice, unless I was talking they may know that that was me. They would just pass next to me in the hall like I was anybody. You know in blackboard I had an instructor link, but I don’t think very few students went to the instructor link before.

But than for those who were doing the video weekly announcements you know right away they would come and say oooo dr. xxxx (the instructor name)... you are the instructor and they know me even before they heard my voice while in the past semesters they had to hear my vice to say... I know that voice you are my instructor... that was one thing that was kind of nice. I want

them to go to that instructor link before to learn about me and you know. And it seems that video announcement helped that peace where there is more recognition by appearance not just by voice recognition”.

The responses provided me with solid ground for considering that video announcements might have certain effects on not just the level of teaching presence and students’ overall online learning experiences, but also on instructors’ perceptions of students. Nevertheless, an accurate measurement of the impact of these video announcements is still questionable, mainly because the concept of teaching presence is in its initial phase of research exploration.

**Email use.** The qualitative inquiry I conducted was primarily aimed at capturing students’ emotional and personal reactions to the delivery method. However, the participants’ responses provided me with unexpected findings regarding students’ online study habits. Interview questions were not directly focused on students’ study habits, but students from both groups explained how they approached online learning. After a comprehensive analysis of the responses, it was clear that the students’ online study habits may be relevant for understanding the implications and overall results of my research intervention.

On my last interview question, “Is there anything else that you would like to add, any second thoughts?” four out of the six participants mentioned that they would prefer that announcements were sent to them via email and not just posted on Blackboard. On my prompt question asking why they would like to get the announcement via email, all four of them stated that they are used to checking their email every single day. Also, these students considered email to be the most standard and routine way of communication between course instructors and students. For example, Tom expressed the following opinion regarding the use of email:

“These announcements were very effective. You just click on the tool on the side of the Blackboard page and every Monday you just have the assignments that are due that week. There was one week where I missed the assignment and I did not realize it until two weeks later. But that was just because I did not check the announcement. It would be nice to receive an automatic email that weekly announcement was updated.”

Similarly, the other interviewee pointed out the importance of email communication with the instructor:

“Once I figured out that announcements came every Monday they were fine (I asked him: what do you mean by that?). Well, in every class you have to figure out the system you know as it goes. Maybe if you get like an email with the announcement maybe. That may be helpful. In some of my classes when they made announcement you get an email.”

Considering that announcement messages were not sent via email, the most frequent tool that students use to get information about their coursework, it casts doubt on how often students were checking the announcements posted on Blackboard. It may be assumed that due to students’ well-established habit of getting all important information regarding coursework via email, the frequency of checking announcements on Blackboard was much lower. Consequently, this may also have an impact on the strength of the research intervention.

**A day for the online course.** Lastly, my qualitative inquiry resulted in one more theme related to the students’ learning habits in virtual environments. The theme labeled *A day for the online course* reveals that the frequency and dynamic of logging on to the LMS Blackboard and working on the online course assignments greatly depend on students’ personal schedule (work

load, other courses' requirements, free time, etc.). Several participants in both study groups provided very similar responses, which indicated that students typically chose one day (when they do not have so many tasks) for online coursework. According to my interviewees, being able to adjust coursework according to one's personal schedule is a great advantage of online learning. The flexibility of online learning is highly appreciated and wanted. Jack, who received text-based announcements, described this issue as follows:

I have Friday off from classes. I do online course once a week. I go Friday and I have put everything on that day... assignments, readings, discussion. I am organized to the extreme and basically I did not need announcements.... And so as a student who is upper level students it is not something than I depend on. Sometime, I used them as a reminder... I did not want to skip something.

Having a specific day in the week for online coursework may have certain implications for the research intervention conducted in this study. In other words, it may be assumed that regardless of how well the entire course design, including announcements, was established or delivered, the students would probably complete their online coursework on a particular day of the week according to their convenience.

## **Perspectives**

As the researcher of this study I have embraced Mayer's (2000) view on qualitative inquiry and its purpose. This author argues that qualitative research is a tool for describing and understanding *the world of human experience*. Undoubtedly, students' experiences with the announcement delivery method and their perceptions of teaching presence are not generalizable phenomena. However, to have more comprehensive insights into the results of this particular

study, understanding the students' point of view is necessary and critical. My qualitative analysis includes not just a description and report of the patterns I found across the participants' responses, but also takes "into account the complex and multiple contexts in which it (research phenomena) occurs" (Chilisa & Preece, 2005, p. 142). As discussed by these two authors, qualitative research perspectives offer a more holistic picture and meaning of the obtained findings and cross-case themes. Thus, the cross-case themes presented above are grouped into the following three perspectives: *Media and type of educational message*, *Perception of an online instructor*, and *Study habits*.

Cross-case themes related to the students' perception of the course structure, consistency in delivery, method of announcement delivery, and the way of using announcements may be associated with a link between the delivery media used for online learning and the educational message. This perspective is labeled *Media and type of educational message*. This perspective strongly suggests that an online instructor (and online course designer) should always carefully consider and match the following critical elements of instruction: nature of educational content, delivery media, and instructional goal. *This qualitative inquiry showed that an online instructor should use a type of delivery media that will emphasize the nature of the educational content and support the contingent educational goal*. Without appropriate matching of the nature of the media, educational message, and goal, the value and efficiency of instruction may decrease significantly. Clearly, the link between these three elements may also be relevant for increasing students' perception of teaching presence.

The second perspective is labeled *Perception of an online instructor*. This perspective directly suggests that the nature of the delivery media may play a significant role in developing teaching presence. The cross-case themes *Feel close* and *I can recognize the instructor* were

developed based on the responses of students assigned to the video group only. Therefore these cross-case themes underlie the students' perceptions of the online instructor and the level of teaching presence in the online course Insect Biology (ENTO 115). This perspective also implies that the perception of the online instructor is an integral part of students' online learning experiences. As argued by many (Bandura, 1971; Vygotsky, 1962) learning is a social phenomenon and requires social interaction. Although it is still questionable how and to what extent the level of students' perception of their online instructors is related to overall course outcome, it is certain that a considerable level of teaching presence adds additional quality and richness to the overall online learning experience.

Lastly, the third perspective labeled *Study habits* suggests that there are many determinants of online learning and teaching presence. My qualitative inquiry suggests that the instructional design of the coursework only partially affects the course dynamic, engagement in course activities, and students' overall approach to online learning. This perspective also indicates that online learning is strongly tied to students' personality and their study habits. Furthermore, it implies that online learning activities are influenced by a variety of subjective issues such as attitude, motivation, learning styles, dedication, and personal preferences. All these and many other elements that were beyond the scope of this research also might be relevant for students' perceptions of teaching presence in online courses.

### **Meta-theme**

Finally, *Characteristic and requirements of a learning environment* emerged as the meta-theme of this qualitative inquiry. Clearly, teaching and learning are complex and multidimensional phenomena. The extent of this complexity is even more obvious in a virtual environment, i.e., in a case where the teaching and learning process is mediated via the LMS



Blackboard. To conduct a successful educational process, it is critical that teachers and instructional designers be aware of and understand the characteristics and requirements of a learning environment.

The level of teaching presence in traditional classroom settings and in online learning environments cannot be enhanced and maintained using the same tools and strategies. My qualitative findings suggest that delivery media, nature of educational content/message and students' study habits are just some of the issues that are vital for managing students' perceptions of teaching presence. However, a critical discussion of the teaching presence concept and its instructional values and measurements clearly include more elements than those presented in this study report. For example, there is no doubt that course goals, overall purpose, the personality of the instructor, teaching methods, assessments, feedback strategies, motivation levels, the personality of students, or students' learning aspirations have significant impact on the perceived level of teaching presence in an online course.

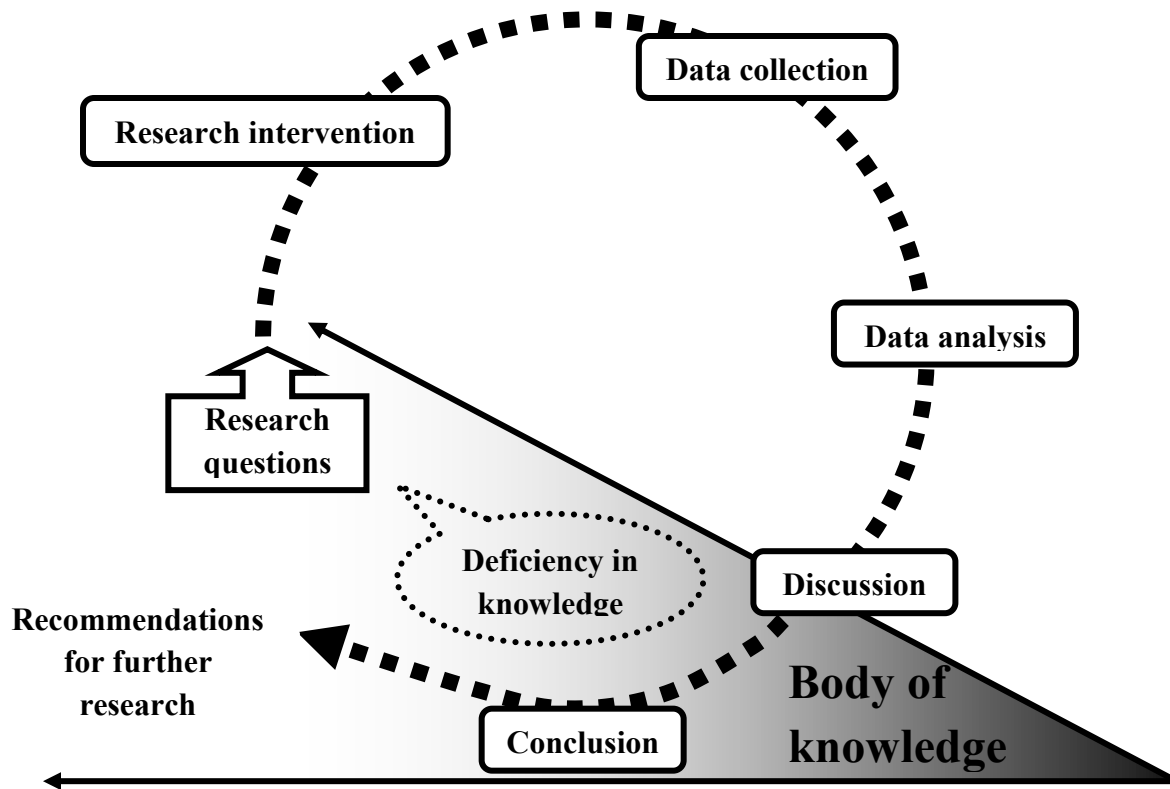
Finally, the purpose of this qualitative inquiry was not to quantify the level of student perception of teaching presence or predict the means for enhancing teaching presence, but rather to provide broader understanding of student online learning experiences in light of the teaching presence concept. In addition, by conducting qualitative inquiry, my intent was to explore issues relevant from the teaching presence standpoint that were not measurable with quantitative instruments.

## CHAPTER 5: DISCUSSION

The nature of this scientific investigation suggests that I as the researcher should take a step back and consider the larger picture of obtaining a greater contextual meaning from the results.

Answering the proposed research questions is the first level of critical reflection of the obtained findings. Second, by comparing and contrasting the findings from this study with other results, my intent is to place my study results within the body of already existing research. If this study fills a gap in the current literature in the area of online learning, then it should be considered a success. Based on a comprehensive literature review, it is my impression that this particular research contributes to a better understanding of the link between the student perception of teaching presence and the delivery method in online learning. Third, there are many relevant issues regarding teaching presence and delivery method that extend beyond the scope of this study, or were only partially explored. However, this intervention opened up some new concerns and added questions that may be intriguing for further research.

Below is the research process flow chart (*Figure 5.1* – on the next page) that outlines the main phases of conducting, elaborating, and integrating the study results within the current body of literature.

*Figure No. 5.1**Elements of the research process: Flow chart*

Taking into account these underlying elements in the process of developing the body of scientific knowledge and giving meaning to this study's results, this chapter includes the following sections: a discussion and interpretation of findings, the conclusion, and recommendations for further research. The discussion and interpretation section addresses the quantitative and qualitative research questions, while the conclusion and recommendation sections provide overall contextual implications of the final results.

## **Discussion and Interpretation of Findings**

I have undertaken this research intervention with the general intent of testing whether or not I can improve students' perception of teaching presence by varying the course announcement delivery method. I have not limited this study to the exploration of the teaching presence concept in an online learning environment, but I also wanted to further knowledge about aspects associated with the main research phenomena such as student engagement and performance. Lastly, I was intrigued to explore the interrelationships between the three elements of teaching presence, student engagement, and student performance and to compare differences across the study groups. In addition, in this research study I used a qualitative method, which helped me develop a more all-inclusive awareness and gave a contextual meaning to my quantitative findings. In other words, I was interested in asking how delivery method contributes to changes in students' perceptions of teaching presence, performance, and course engagement in an online learning environment. Thus, in this study the following research questions were proposed:

- a) To what extent does the introductory announcement delivery method affect teaching presence in primarily text-based online courses supported by LMS Blackboard?
- b) Is there a difference in student course engagement between students who view introductory announcements delivered as text and students who view them as asynchronous video?
- c) Is there a difference in student performance between students in online courses where introductory announcements are delivered in textual format and students in online courses where it is delivered via asynchronous video messages?

- d) Is there a difference in the interrelationships between teaching presence, student course engagement and student performances in the control and experimental groups of students?
- e) How does a change in delivery method contribute to the changes in students' perception of teaching presence, performance, and course engagement?

To my knowledge, the proposed research questions have not been addressed in other empirical studies. Therefore, providing answers to these questions may be a relevant contribution to the body of knowledge in the domain of distance education. In the following section the quantitative questions will be addressed directly, while the answer to the fifth question, found in the qualitative responses, will be provided throughout the entire discussion and in the interpretation of the quantitative results.

### **Does Announcement Delivery Method Affect Teaching Presence?**

The main intent of this study was to explore the question: to what extent does the introductory announcement delivery method affect teaching presence in primarily text-based online courses supported by the LMS Blackboard? The study results show a partial impact of the announcement delivery method on student perceptions of teaching presence.

According to Garrison, Anderson and Archer (2000), the CoI/TPS (Community of Inquiry – Teaching Presence Subscale) scale used in this study consists of three subscales aimed at measuring the following integral sub-concepts of teaching presence: Design and Organization, Facilitation, and Direct Instruction. I conducted an independent *t*-sample test to compare student perceptions of the level of teaching presence in the control and experimental groups. For the entire CoI/TPS, the *t*-test results did not show a significant difference in the scores between the two study groups. However, a significant difference between the groups was

found for the Facilitation subscale. Students who received the video-based announcements perceived a higher level of online coursework facilitation throughout the semester. This finding, interesting in and of itself, calls for an explanation. It could be asked why the research intervention was the only determinant of the students' perception of facilitation and not the other two integral elements of the teaching presence concept: design and organization, and direct instruction.

In the research conducted by the proponents (Garrison, Anderson, & Archer, 2000) of the concept of teaching presence as part of a more general Community of Inquiry (CoI) model, there were no explicit empirical findings regarding the link between video delivery and students' perceptions of teaching presence. These three authors were primarily focused on assessing teaching presence in a text-based learning environment. However, other study results suggest that video technology can have a major effect on students' perceptions of teaching presence. For instance, Jones, Naugle, and Kollof's (2008a) study, which is relatively similar to and relies on the same concept of teaching presence as this research, compared the role of the introductory video in establishing teaching presence in a fully online course and in a blended course. This study showed that the introductory video contributed to establishing teaching presence by enhancing all three roles of the online instructors as defined by Garrison, Anderson, and Archer (2000). With regard to discourse facilitation, Jones, Naugle, and Kollof suggest that simply seeing the announcement video facilitated discourse in online coursework. The authors also argued that after seeing the video, students had a good indication of where to start with the course activities, what to do, and where to go in order to find answers to their questions. Although Jones, Naugle, and Kollof's research relied on Garrison, Anderson, and Archer's concept of teaching presence, surprisingly, they did not utilize the teaching presence scale

developed by Garrison, Anderson, and Archer, but rather used a different survey to measure the level of teaching presence in online and blended courses. Instruments used by Jones, Naugle, and Kollof provided exclusively descriptive types of data and their results were reported in the form of percentages without mention of whether or not their obtained results were statistically significant. Therefore, the nature of my findings, as well as the level of statistical analysis, cannot be fully comparable to Jones, Naugle, and Kollof's research.

It is interesting to note that many recent studies (Enbody & Severance, 1989; Campbell, Cleveland, 2005; Lowenthal, Parscal, 2008) explore the link between video technology (pre-recorded and streaming video delivery), teaching presence, and learning in an online environment. However, these authors mostly provide declarative statements based on observations or qualitative findings without solid statistical evidence that video enhances the level of teaching presence in online courses. They advocate for the use of video as a strategy for enhancing teaching presence and humanizing distance education by incorporating asynchronous video clips and developing emotional presence through the video delivery method.

One possible explanation for the obtained results regarding the facilitation aspect of teaching presence may be that the content of the introductory video announcements impacted the way students responded to the survey items. Basically, each weekly announcement to students in the video group provided basic information about what students should do over the week, assignment due dates, what is coming up next week, and words of encouragement and support such as "look forward to seeing you online" or "let me know if there is any way I can help you." It is possible that a combination of announcement content and the nature of asynchronous video delivery was perceived by students as a very facilitating element for the coursework. It can be assumed that the announcement content was enhanced by the instructor's voice and visual

appearance. Therefore, this particular instructional approach was very stimulating from the students' standpoint.

This empirical finding is congruent with the students' responses on the qualitative inquiry. All students enrolled in the video group reported that being able to see and hear the online instructor added additional quality to their online learning activities. For instance, Patty commented:

All my online courses so far, make you feel..., you know, you are an independent for the most of part. And you do not have so much teacher interaction, in fact for the most of the teachers I even do not how they look like when I take an online course. So when she comes on (the Instructor for ENTO 115), it kind gives some extra sense, how I am gonna to put this, you do a work because the teacher is kind of there with you, you know how is she looks like... It adds another sense of learning. You can hear and see it. It is kind of like when you move to the college you mom is not there to tell what to do all the time. But when she comes over your apartment she is actually there and you want to make sure that it does look good. It is just like the parent figure or big brother or something. She is out there. Getting done with the assignment is definitely increased by seeing her.

An explanation of the obtained results regarding facilitation is even more obvious if we look at the single scale items used to measure students' perceptions of facilitation as an aspect of teaching presence in online courses. For example, scale items eight and nine state: The instructor helped keep the course participants on task in a way that helped me to learn (item 8); The instructor encouraged course participants to explore new concepts in this course (item 9). An



appropriate match between the nature of the video delivery and the announcement content resulted in a higher perception of facilitation, which was successfully captured with the CoI/TPS - Facilitation subscale.

### **Do Students' Course Engagement and Performance Depend on the Announcement Delivery Method?**

Along with measuring students' perception of teaching presence, this research focused on determining whether or not there is a relationship between the announcement delivery method and students' course engagement and performance. The following research questions were proposed: RQ# 2: Is there a difference in student course engagement between students who view introductory announcements delivered as text and students who view them as asynchronous video?; and RQ# 3: Is there a difference in student performance between students in online courses where introductory announcements are delivered in textual format and students in online courses where it is delivered via asynchronous video messages? In order to answer the proposed questions, I conducted an independent *t*-test analysis that showed there was no difference between the groups in terms of students' engagement in course activities. With regard to student course performance, the obtained findings only partially confirmed the initial research hypothesis, which stated that students who were assigned to the introductory video study group would score higher on the announcement recall test and overall assignment scores at the end of the semester.

Student engagement in this research was defined as the amount of invested effort in course activity, which was measured using the following two indicators: a) the frequency of reviewing the introductory messages; b) the length of time between the date of reviewing the introductory message and the date of assignment submission. Based on these measures of student

engagement in coursework, the statistical analysis showed no difference in the level of engagement between students in the video-based group and students in the text-based group. In other words, announcement delivery method did not modify student engagement in terms of using online course tools and decreasing the length of time for submitting the assignment. However, results from other studies suggest that the use of video technology can positively impact student engagement in online courses. For example, in Salazar's view (2010), the integration of pre-recorded video materials in online courses engages students in the class environment. As discussed by this author, a video-recorded lecture "supports student retention by engaging students, increasing student satisfaction, and promoting student achievement" (p. 55). In addition, Salazar also indicated that this is an especially useful strategy for teaching students who are using online course materials in an offline mode (asynchronously). Other authors, such as Lee and Do (1997), have also suggested that video clips can be useful multimedia tools in the online learning environment. More precisely, the authors stated that hypermedia, including video clips, "can make learning much more active, engaging, and tailored to the needs and interests of individual students" (p. 6). In addition, it would be remiss not to note that there is a substantial body of literature (Burton, 2009; Greenberg, 2009; Lever-Duffy, McDonald, & Mizell, 2005; Ramirez-Martinell, Sime, & O'Donoghue, 2006) that advocates for the utilization of video technology in online learning. Asynchronous video and especially two-way video technology are seen as useful instructional tools for enhancing student engagement and participation in online learning environments.

However, it is critical to point out that different authors define the notion of engagement in different ways. Therefore, the notion of engagement refers to a wide range of learning qualities. For example, in Sato's view (2004), student engagement may refer to the "degree of

students' effort, initiative, motivation, diligence, sense of a responsibility, attention to details, and sensitivity to materials and other people in the environment" (p. 148). Additionally, some authors also include the following qualities under the notion of *engagement*: intellectual engagement or level of critical thinking, intensity of interaction with other peers or instructors, level of participation in online discussions (posting and responding to other posts), personal interest in educational materials, etc. Clearly, there are many ways in which student engagement can be defined, and each of these approaches can be justified depending on the research purpose or paradigms used. In addition, there are also many methods and research instruments for measuring the level of student engagement and whatever it implies in online coursework.

As defined and measured in this particular research, it was found that student engagement was not affected by the announcement delivery method. Nevertheless, this finding doesn't necessarily imply that introductory announcement video clips did not have any positive impact on some other types of student engagement in online course ENTO115. The video clips may have been more relevant for enhancing student engagement in course discussions or boosting students' interest in the course topics. Furthermore, some indications that video announcements contributed to some other type of student engagement were found in the interviewees' responses. During the interviews, two out of three participants enrolled in the video group briefly commented that video clips were engaging. Yet it is still uncertain in which way and to what extent the video announcements contributed to the students' engagement. Identifying and accurately measuring other types of student engagement that can be impacted by the announcement delivery method requires a new set of research instruments.

Lastly, the qualitative inquiry showed that the students' study habits may be a relevant factor in the students' engagement in the coursework. The students reported that they perceived

online learning to be an opportunity for flexible studying during the academic semester. Several responders pointed out that they adjusted their online course activities according to a weekly schedule and other academic tasks. This implies that some students become involved in ENTO 115 course activities depending on the timing of other academic tasks. This also implies that online course design or announcement delivery method does not necessarily play a significant role in student course engagement.

The third research question addresses the relationship between announcement delivery method and student course performance. Student course performance refers to the amount of information that students were able to recall from the content of the announcement as well as students' course scores at the end of the semester. The level of announcement recall was measured by the ACRQ (Announcement Content Recall Questionnaire). The ACRQ was administered twice and consisted of several items specifically designed to measure students' recall level. The total amount of earned points at the end of the semester was another indicator of the students' course performance. In order to gather data on students' overall course points, I used the Blackboard Grade Center. I conducted a *t*-test analysis to determine if there was a difference between the two groups of students in terms of course performance. The statistical analysis of data showed only a limited impact of the announcement delivery method on students' performance.

With regard to the students' overall course points, there was no significant statistical difference between the experimental group and the control group at the end of semester. The text-based group performed equally well as the video-based group of students. The research intervention did not result in any statistically important differences concerning students' final course points.

One possible explanation of the obtained result could be that the research intervention, the announcement delivery method, was not of sufficient magnitude to make measurable changes in the students' final course points. The combined length of the video announcement clips that were used throughout the entire semester was between 20-25 minutes. More precisely, every week students were exposed only to 1-3 minutes of the research intervention. The final course grade was made up of points earned on the final exam and ten major assignments throughout the semester and it seems that this fairly short research intervention could not affect overall course performance.

Another issue that should be taken into consideration is that the content of the announcements was not directly subject to grading. The announcements provided primarily organizational information such as due dates, instruction on where to find materials, what is coming up next week, or words of encouragement. The purpose of the announcements was to help students get a better sense of the course activities and to encourage their course participation. This could be an additional factor that impacted study results.

A comprehensive literature review reveals that this finding is consistent with the results of some other recent studies. For instance, a study conducted by Zhan (2007) focused on exploring the relationship between the perceived degree of teaching presence and the learning outcomes (content knowledge and knowledge contraction). It should be pointed out that the author compared two groups in which students' perception of the teaching presence was significantly different. This research showed that the perceived level of teaching presence was not related to the students' learning outcomes.

It is noteworthy that another study (Zhan & de Montes, 2007) that utilized the same instrument for measuring the level of teaching presence as used in this research, showed similar

results. Furthermore, the research settings of Zhan and de Montes's study were very like to the settings of the study I conducted. These two authors used an undergraduate online course in liberal arts studies delivered with the LMS WebCT. The sample size of this study was 119 students, while the students' learning performance was measured by the total amount of earned points at the end of the course. Based on the obtained data the authors reported that "the findings did not show the connection between teaching presence and academic achievement. Students who experienced a higher degree of teaching presence in the course did not outperform those who experienced a lower level of teaching presence in the course" (p. 119). Zhan and de Montes suggested that learning in the virtual environment is a multidimensional and dynamic process. Therefore, one possible explanation of the study results was that online learning success depends on many factors, such as student personality, learning motivation, technology access, time spent on-task, etc. Additionally, Brady and Bedient's (2003) research also showed that the level of teaching presence was not a determinant of student performance. Their study conclusion suggested that the concept of teaching presence needs to be more sensitive, especially to issues regarding the development of a more effective online class design.

It is interesting to point out several authors (Bedlovic, 2009; Daly, 2006; Garrison & Anderson, 2003) who argue that the level of teaching presence plays a vital role in the development of cognitive and social presence, which in turn positively affect students' academic achievement. For example, in Daly's view (2006), "the teaching presence is the element that brings all other elements together in that the teacher designs, facilitates, and directs the cognitive and social processes in order to achieve the desired learning outcomes" (p. 93). According to Garrison and Anderson (2003), the level of student perception of teaching presence determines

the level of cognitive and social presence in an online course. Thus, a higher cognitive and social presence should result in a higher level of student performance.

Lastly, it would be remiss not to note, that the qualitative findings obtained in this research also do not provide sufficient evidence to support the claim that the level of teaching presence determines the student course outcome. Responses of the interview participants in both groups did not suggest or indicate that their overall course achievement was directly influenced by the announcement delivery method. I agree with Zhan and de Montes's (2007) view that the learning process in an online environment is a multidimensional phenomenon dependent on a wide array of factors. The multidimensional nature of online learning is one possible explanation of the relationship between the perceived level of teaching presence and the students' overall course outcome. In this particular research, students' course aspirations, motivations for learning, interest in the course topic, or personality were more significant factors of overall course outcomes than the announcement delivery method.

The second indicator of student performance refers to the level of students' announcement recall. The level of announcement recall was measured twice, in the third and eighth week of the semester. The study findings indicate that the video-based group performed significantly better in the first testing, while in repeated testing there was no statistically significant difference between the two research groups. Results of the first and second measurements taken together showed no significant difference in terms of the level of recall between the video-based and text-based groups.

Clearly this is an interesting result, especially from the aspect of media delivery and its instructional value in conveying an educational message. Here, the questions that arise for the discussion is *why* the repeated measurement of the level of students' announcement content

recall did not show similar results concerning the level of content retention as the first testing? Why did the video-based group perform significantly better on the first testing, and why was there no difference between the groups on the second testing?

Research findings have underscored that the question of long-term learning benefits from the use of different instructional multimedia is still debatable. For instance, some authors, such as Clark (1983), argue that better learning performance could be ascribed to a change of instruction delivery media. He also suggested that learning benefits are the result of using new media *per se* in instruction delivery. In Clark's view, novelty in the classroom (or in an online environment, as is the case in this study) can be a sufficient factor in enhancing the learning outcome. This implies that the learning benefit is caused by a change in the delivery media itself and not by a change in the nature of the multimedia used, that is, video. This learning phenomenon is called the Hawthorne effect. According to Lisewski and Settle (1996), the Hawthorne effect "occurs when learners are stimulated to a greater effect simply because of the novelty of treatment. As the treatment grows familiar, it loses its potency" (p. 115).

There is a body of literature (Balaban-Sali, 2008; Akbiyik, & Akbiyik, 2010) that highlights that overlooking the Hawthorne effect can lead to a misinterpretation of results. For instance, in Moreno's (2005) view, "it is important to distinguish superficial, transient learning benefits that may reflect the novelty effect from using the new medium and deeper longer-lasting learning benefits" (p. 519). Furthermore, the qualitative inquiry results obtained in this study may also suggest that the Hawthorne effect to be a possible explanation of the quantitative finding regarding the level of announcement recall. All interviewees who were assigned to the video-based group reported that video-based announcements were new to them, and that they had never before experienced this type of announcement delivery method.



### **Is There an Interrelationship Between Teaching Presence, Students' Course Engagement and Performance?**

The final research question in this study refers to the interrelationship between the level of perceived teaching presence, student performance, and student course engagement. More precisely, one of the aims of the research was to explore to what extent the proposed Presence, Engagement and Performance Model (TPEP) would be equivalent across the two study groups. The main assumption was that the level of teaching presence (TP) was related to student course engagement (SE) and student performance (SP). It was also assumed that SE and SP are mutually related.

I used the Structural Equation Modeling (SEM) approach and conducted a Multiple Group Analysis test to verify the hypothesized TPEP model. For testing the goodness-of-fit of the proposed TPEP model I used the following absolute indices: a) the Chi-square ( $\chi^2$ ) goodness-of-fit test; b) the Root Mean Square Error of Approximation (RMSEA); and the Comparative Fit Index (CFI/TLI). The test for goodness-of-fit was conducted for both study group samples and for the overall study sample. The statistical analysis showed that the TPEP model fit the data well. However, it should be highlighted that a good-fitting model is not necessarily a relevant model for the given settings and research. If the model fits the data well, as is the case in this research, it means it is appropriate to proceed to further analysis.

The next step in the statistical analysis was to examine if and to what extent the TPEP model would be equivalent across the two study groups. Thus, a path analysis was conducted between the latent TP, SE, and SP constructs. The overall result based on the Multiple Group Analysis test was not significant. The latent variable Teaching Presence (TP) does not predict Student Engagement (SE) and Student Performance (SP). Furthermore, the findings also showed

that there was no significant mutual relationship between Student Engagement (SE) and Student Performance (SP). These results were found for the entire study sample and in both sub-samples (control and experimental groups).

Presented research results did not demonstrate the existence of an interrelationship between the factors in the hypothesized TPEP model. There are at least three possible reasons that may explain the insignificant results of the Multiple Group Analysis test.

First, according to Schumacker and Lomax (2004), a sufficient sample size for performing SEM-Multiple Group Analysis is between 250-500. However, in this study, the sample size was 87 participants. The fact that the study sample was not adequate may be one of the most critical limitations, and probably caused the insignificant results. Another explanation of the obtained results is a structural or residual error. A residual error refers to the unexplained variances or factors that can appear in the proposed model and influence the measured variables, and. Basically the residual error includes all relevant factors that cannot be controlled or measured by the researcher. For example, there is a vast variety of factors such as students' motivation, interest in the course topic, computer skills, or even internet speed may cause problems in viewing video announcements. Lastly, one of the explanations of the results refers to the possibility that the proposed theoretical model may have simply been incorrect.

### **Conclusion and Recommendations**

The research results show a limited influence of the announcement delivery method on the students' perceptions of teaching presence in the online learning environment. Besides this main result, the study found that the announcement delivery method is not a determinant of student performance and student course engagement. Additionally, SEM-Multiple Group Analysis did not show that the vital constructs explored in this study, i.e., teaching presence,

student performance, and student course engagement, are interrelated. Finally, it may be concluded that the quantitative and qualitative research findings taken together can only to a certain extent support the main study assumption that the announcement delivery method would be critical for increasing the level of student perception of teaching presence, student performance, and student course engagement.

The first major finding of this study is that the research intervention enhanced students' perception of the instructor's facilitation role in the online course ENTO115. Facilitation is one of three aspects (the other two aspects being design and organization, and direct instruction) of the teaching presence concept. Although the study intervention did not influence the level of teaching presence overall, the obtained results suggested that students in the video-based group were more receptive to the instructor's facilitation efforts during the course. This quantitative finding is strongly supported by student responses provided in the qualitative inquiry. All the students assigned to the video-based group reported that being able to see and hear the instructor was a stimulating and encouraging element of their online coursework. Similar statements were not found in the responses of students who received text-based announcements.

Another critical finding refers to the students' opinion that the video-based announcements make an online instruction more personalized. Only the students who received the video announcements reported that they felt closer to the instructor. This group of students also stated that they were able to recognize the online course instructor when they saw him/her in the college building, which was not the case in their other online courses. This result was confirmed by the instructor as well. Overall, the students enrolled in the video-based group felt more connected with the instructor. They also had a stronger impression that the instructor was indeed present in the online course during the entire semester. It is important to note that this

conclusion is drawn only from the students' interview responses. Consequently, there is no statistical justification for this particular result.

The third important result highlights the impact of the delivery media on student performance regarding the level of announcement content recall. This research did not provide straightforward findings to support the conclusion that video-based announcements can enhance the students' level of announcement content recall. In other words, the study measurements failed to disclose two consecutive statistically significant effects of the research intervention on the level of the students' content recall. The difference between the groups was found in the first testing, but the repeated content recall testing showed almost identical results in the control and experimental groups. Although the obtained results can be explained by the learning phenomenon known as the Hawthorne effect, it might be possible that the higher level of retention is actually influenced by the instructional features of asynchronous video delivery. Furthermore, some recent research (Schwartz & Hartman, 2007; Romanov & Nevgi, 2007; Nikopoulou-Smyrni & Nikopoulos, 2010) suggests that video technology can have a positive impact on learning outcomes. However, the ambiguity of this result is reinforced by the fact that there is also a lack of solid evidence to support the claim that the Hawthorne effect is the only adequate explanation. Further exploration is needed to identify the actual determinant of the higher level of announcement content recall. Further research on this issue should use more sensitive measurements than were utilized in this study.

The qualitative inquiry revealed an unexpected but particularly valuable result for understanding the nature of learning in online environments. Based on the reports of interview participants from both study groups, it can be concluded that students' study habits play a critical role in online coursework. Undoubtedly, the well-established habit of receiving important

information regarding coursework via email, as well as students' tendency to choose one day in the week (the day with fewer academic tasks) for completing online assignments, also influenced the research intervention. It should be noted that because of the research intervention, the course instructor did not use email as the prime communication channel with students, but rather the video- and text-based announcements posted on Blackboard. Furthermore, students' study habits of doing online course assignments on a specific day of the week could be a significant determinant of the level of the students' course engagement. Thus, this qualitative finding might support the quantitative finding which revealed that the announcement delivery method was not relevant for the level of student course engagement.

Overall, in a summary of this study, the following decisive conclusions can be drawn: Video announcements can be an effective way to increase the level of students' perception of instructors' facilitation role in online courses. Additionally, video-based announcements make virtual learning more personalized, emphasizing the interaction between online students and instructors. Also, it should be pointed out that students' study habits play an unquestionably important role in their online learning approach.

Finally, the research results taken together suggest the following general implications relevant from the online teaching standpoint. These implications may also help instructional designers and practitioners in this field enhance the effectiveness of the online learning approach:

The instructional effectiveness of the delivery media, including the announcement delivery method, depends on the way it is utilized in the course. For online instructors and course designers, it is imperative to match the nature of the delivery media with the goal and overall purpose of the instruction. The characteristics of the instructional media have to support

the (educational) content that will be delivered to students. Specifically, this research showed that video announcements are more effective in conveying big ideas, general information, facilitating course activities, encouraging students, providing summaries of modules or units, and keeping students more connected with the personality of the online instructor. On the other hand, text-based announcements seem to be more effective in providing more particular information such as assignment due dates, assignment guidelines, and explanations on where to find specific information on Blackboard (e.g., text announcements can include links to other sources, assignment samples, etc.). Also, it seems that text announcements are more useful as reminders, because students can print them out and make notes or mark/highlight the important information.

From a research standpoint, this mixed methods study raises the issue of choosing the most adequate research instruments for measuring the perceived level of teaching presence, student course engagement, and student performance. Another concern is the level of control over the research settings and the intervention. These questions appear relevant particularly if the research is conducted in a real (on-going) online course. Additionally, researchers and online instructors should be aware that regardless of how well course design and coursework are established, other factors such as students' enthusiasm, persistence, intrinsic motivation, interest in a course topic, or even level of computer literacy influence the observed and measured phenomena. However, those issues were beyond the scope of the current research.

It seems that this study evoked more new questions than was initially expected. The following recommendations for further research evolved from the obtained findings of this mixed methods study:

- a) An interesting area for further exploration refers to the constitutive elements of the concept of teaching presence. The current model of teaching presence relies on three indicators: design and organization, facilitation, and direct instruction. My qualitative inquiry suggests that these indicators may not be sufficient to fully describe the complexity of teaching presence in online learning environments and student-teacher interactions in general.
- b) Another question that calls for additional exploration is related to the nature of the delivery media used and its capability to convey the announcements' message. Specifically, it would be instructionally valuable to explore what type of announcement content best corresponds with the nature of the delivery media (video or text delivery). The current research provides only qualitative findings about this issue; however, quantitative data based on solid statistical analysis is needed to reach a higher level of generalizability of the results.
- c) Further research should also focus on the instructional benefits of combining video format and text format in the announcement delivery. Qualitative responses provided some indication that video announcement clips accompanied by transcripts may compensate for the weaknesses of each delivery media when used alone.
- d) Lastly, an additional area of exploration refers to the characteristics of the asynchronous video clips *per se*. From the standpoint of the production of instructional materials, it would be interesting to explore the impacts that the length and quality of video, video sequencing/indexing, or the possibility of downloading video clips has on promoting teaching presence. Also, it would be intriguing to explore whether or not there would be a difference in the level of students' perception

of teaching presence if further research interventions went beyond the standard “talking- head” approach in shooting video clips. Further intervention may use video in a way that better reflects real instructional settings (e.g., video that shows the instructor in the entomology laboratory or in the office) and personalities of the instructors.

Inevitably, in this age of rich multimedia technology, online instructors have to step forward and embrace the advantages and necessity of using advanced technology, including asynchronous video. Text-based online learning can be an effective approach; nevertheless, it will not provide additional quality and richness to the overall online learning experience. Video provides an opportunity to add additional elements of instruction, such as motion, the instructor’s voice, and the instructor’s visual appearance, which may consequently lead to a higher perception of teaching presence in an online learning environment.



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## **APPENDICES**



## Appendix A

### *Community of Inquiry Survey –Teaching Presence Subscale (CoI/TPS)*

Developed by: Ben Arbaugh, Marti Cleveland-Innes, Sebastian Diaz, Randy Garrison,  
Phil Ice, Jennifer Richardson, Peter Shea & Karen Swan

Retrieved September 10, 2009 from <http://communitiesofinquiry.com/methodology>

Student name: \_\_\_\_\_

#### **Design & Organization**

1. The instructor clearly communicated important course topics.
2. The instructor clearly communicated important course goals.
3. The instructor provided clear instructions on how to participate in course learning activities.
4. The instructor clearly communicated important due dates/time frames for learning activities.

#### **Facilitation**

5. The instructor was helpful in identifying areas of agreement and disagreement on course topics that helped me to learn.
6. The instructor was helpful in guiding the class towards understanding course topics in a way that helped me clarify my thinking.
7. The instructor helped to keep course participants engaged and participating in productive dialogue.
8. The instructor helped keep the course participants on task in a way that helped me to learn.
9. The instructor encouraged course participants to explore new concepts in this course.
10. Instructor actions reinforced the development of a sense of community among course participants.

#### **Direct Instruction**

11. The instructor helped to focus discussion on relevant issues in a way that helped me to learn.
12. The instructor provided feedback that helped me understand my strengths and weaknesses.
13. The instructor provided feedback in a timely fashion.

#### 5 point Likert-type scale

1 = strongly disagree, 2 = disagree, 3 = neutral, 4 = agree, 5 = strongly agree

## Appendix B

### *Announcement Content Recall Questionnaire (ACRQ)*

This questionnaire is designed to collect demographic data and assess your understanding of basic the facts regarding your insect pet assignment. Listed below are 10 multiple choice questions. Please answer each by checking the appropriate response box. This will take approximately 2-3 minutes.

Student name: \_\_\_\_\_ Thanks!

1. Your Gender is:
  - ☐ Male
  - ☐ Female
  
2. Year of study is:
  - ☐ Freshmen
  - ☐ Sophomore
  - ☐ Junior
  - ☐ Senior
  
3. During this semester you are living:
  - ☐ On campus
  - ☐ Off campus
  
4. Have you ever taken an online course before?
  - ☐ No, I have never attended an online course before
  - ☐ I attended online courses only in high school
  - ☐ Yes, I attended between 1-3 online courses at the university
  - ☐ Yes, I attended more than 3 online courses at the university
  
5. What kind of insect will you keep as a pet?
  - ☐ Cricket
  - ☐ Cockroach
  - ☐ Caterpillar
  - ☐ Tobacco Hornworm
  - ☐ Don't know
  - ☐ Other
  
6. Where do you pick your pet?
  - ☐ In the entomology main office (Entomology Hall 202)
  - ☐ In the Insect Laboratory (Entomology Hall 212)
  - ☐ Insect will be mailed to me
  - ☐ In the professors' office (Entomology Hall 201B)
  - ☐ Don't know
  - ☐ Other

7. How long should you keep your insect pet at home?
- ☐ One week
  - ☐ Two weeks
  - ☐ Three weeks
  - ☐ Whole month
  - ☐ Don't know
  - ☐ Other
8. How many science inquiry investigations you need to conduct?
- ☐ One,
  - ☐ Two
  - ☐ Three
  - ☐ Four
  - ☐ Don't know
  - ☐ Other
9. Your science inquiry investigation report should be submitted as:
- ☐ a Word document with 12 point font, double-spaced,
  - ☐ a PowerPoint presentation between 10-15 slides
  - ☐ an email
  - ☐ a hard copy report
  - ☐ Don't know
  - ☐ Other
10. Where can you find the detailed instruction about this assignment?
- ☐ In the announcement sections
  - ☐ Under Module 4, Lesson1
  - ☐ Under Module 3, Lesson 1
  - ☐ In the email that Instructor sent this week
  - ☐ Don't know
  - ☐ Other

**Appendix C***Frequency of Reviewing Announcement Protocol (FRAP)*

Student Code: \_\_\_\_ Group: \_\_\_\_\_

Student: \_\_\_\_\_

Announcement 1: \_\_\_\_\_

Announcement 2: \_\_\_\_\_

Announcement 3: \_\_\_\_\_

Announcement 4: \_\_\_\_\_

Announcement 5: \_\_\_\_\_

Announcement 6: \_\_\_\_\_

Announcement 7: \_\_\_\_\_

Announcement 7: \_\_\_\_\_

Announcement 8: \_\_\_\_\_

Announcement 9: \_\_\_\_\_

Announcement 10: \_\_\_\_\_

Announcement 11: \_\_\_\_\_

Announcement 12: \_\_\_\_\_

Announcement 13: \_\_\_\_\_

Announcement 14: \_\_\_\_\_

Announcement 15: \_\_\_\_\_

## Appendix D

### *Assignment Submission Protocol (ASP)*

Student Code: \_\_\_\_ Group: \_\_\_\_\_

Student: \_\_\_\_\_

	Ann. Posted
	Date
Ann. 1	
Ann. 2	
Ann. 3	
Ann. 4	
Ann. 5	
Ann. 6	
Ann. 7	
Ann. 8	
Ann. 9	
Ann. 10	
Ann. 11	
Ann. 12	
Ann. 13	
Ann. 14	
Ann. 15	

	Ann. Reviewed
	Date
Ann. 1	
Ann. 2	
Ann. 3	
Ann. 4	
Ann. 5	
Ann. 6	
Ann. 7	
Ann. 8	
Ann. 9	
Ann. 10	
Ann. 11	
Ann. 12	
Ann. 13	
Ann. 14	
Ann. 15	

	Assign. Submitted
	Date
Ann. 1	
Ann. 2	
Ann. 3	
Ann. 4	
Ann. 5	
Ann. 6	
Ann. 7	
Ann. 8	
Ann. 9	
Ann. 10	
Ann. 11	
Ann. 12	
Ann. 13	
Ann. 14	
Ann. 15	

**Appendix E***Final Points Protocol (FPP)*

Student Code: \_\_\_\_ Group: \_\_\_\_\_

Student: \_\_\_\_\_

Assignment 1: \_\_\_\_\_

Assignment 2: \_\_\_\_\_

Assignment 3: \_\_\_\_\_

Assignment 4: \_\_\_\_\_

Assignment 5: \_\_\_\_\_

Assignment 6: \_\_\_\_\_

Assignment 7: \_\_\_\_\_

Assignment 7: \_\_\_\_\_

Assignment 8: \_\_\_\_\_

Assignment 9: \_\_\_\_\_

Assignment 10: \_\_\_\_\_

Assignment 11: \_\_\_\_\_

Assignment 12: \_\_\_\_\_

Assignment 13: \_\_\_\_\_

Assignment 14: \_\_\_\_\_

Assignment 15: \_\_\_\_\_

## Appendix F

### *Interview Protocol (IP)*

#### ESSENTIAL PROJECT INFO & PURPOSE:

This Interview is a part of a dissertation research project. The purpose of the interview is to gather information about personal reactions of students regarding the introductory delivery methods used in an online course, INSECT BIOLOGY ENTO115 in this case.

#### INTERVIEWEE INFO:

Name: \_\_\_\_\_

Date: \_\_\_\_\_ Time: \_\_\_\_\_

Site: \_\_\_\_\_

#### INTRODUCTION:

You have been selected randomly to speak with me today because you have been identified as a student who was enrolled in the online course INSECT BIOLOGY ENTO115. This research project focuses on improving online instruction, with special interest in understanding how different delivery media methods affect learning in online courses. The research will have no impact whatsoever on your course evaluation or assessment. It is attempting to learn more about your personal reaction to the introductory delivery method used in your course. Are you ready to start?

(INTERVIEW QUESTIONS on the next page)

### INTERVIEW QUESTIONS:

1. Tell me something about yourself, your previous experience with online learning or computers?
2. How would you describe announcements that were given by instructors?
3. What was there about weekly introductory announcements that were helpful to you as a distance student in the online environment?
4. How well did you understand the content of the announcement?  
 Probe questions
  - What helped/prohibited you from getting the key points from the announcement content?
  - Do announcements motivate you to do your course assignments?
5. How did you use announcements?
6. Did announcement help you to understand the assignment?
7. Did announcements help you organize your course activities?
8. Did announcements help you get starting your assignment?
9. How did you feel after getting the announcement from the instructor?  
 Probe question
  - Tell me a bit more about your reaction at the announcement format? Is there anything that you particularly like/dislike?
10. Did the instructor clearly state topic, goal and assignment activities?
11. Did the instructor make you more focused on course activities?
12. Did the keep you engaged in course activities?
13. Is there anything that you want to add, any second thoughts?

### CLOSING:

I really appreciate your time and readiness to participate in this study. If you want to know about the results of this research please feel free to contact me any time.



## Appendix G



December 1, 2009

Bojan Lazarevic  
Teaching, Learning and Teacher Education

Allen Steckelberg  
Teaching, Learning and Teacher Education  
59 HENZ UNL 68588-0355

IRB Number: 20091210410EP  
Project ID: 10410  
Project Title: Examining the Role of the Introductory Video in the Development of Teaching Presence in Online Instruction

Dear Bojan:

This letter is to officially notify you of the approval of your project by the Institutional Review Board (IRB) for the Protection of Human Subjects. It is the Board's opinion that you have provided adequate safeguards for the rights and welfare of the participants in this study based on the information provided. Your proposal is in compliance with this institution's Federal Wide Assurance 00002258 and the DHHS Regulations for the Protection of Human Subjects (45 CFR 46).

Date of EP Review: 12/01/2009

You are authorized to implement this study as of the Date of Final Approval: 12/01/2009. This approval is Valid Until: 11/30/2010.

We wish to remind you that the principal investigator is responsible for reporting to this Board any of the following events within 48 hours of the event:

- ☐ Any serious event (including on-site and off-site adverse events, injuries, side effects, deaths, or other problems) which in the opinion of the local investigator was unanticipated, involved risk to subjects or others, and was possibly related to the research procedures;
- ☐ Any serious accidental or unintentional change to the IRB-approved protocol that involves risk or has the potential to recur;
- ☐ Any publication in the literature, safety monitoring report, interim result or other finding that indicates an unexpected change to the risk/benefit ratio of the research;
- ☐ Any breach in confidentiality or compromise in data privacy related to the subject or others; or

☐ Any complaint of a subject that indicates an unanticipated risk or that cannot be resolved by the research staff.

For projects which continue beyond one year from the starting date, the IRB will request continuing review and update of the research project. Your study will be due for continuing review as indicated above. The investigator must also advise the Board when this study is finished or discontinued by completing the enclosed Protocol Final Report form and returning it to the Institutional Review Board.

If you have any questions, please contact the IRB office at 472-6965.

Sincerely,

A handwritten signature in black ink, appearing to read "Mario Scalora". The signature is fluid and cursive, with the first name "Mario" and last name "Scalora" clearly distinguishable.

Mario Scalora, Ph.D.  
Chair for the IRB



## Appendix H



COLLEGE OF EDUCATION AND HUMAN SCIENCES  
Department of Teaching, Learning and Teacher Education

### Student Informed Consent Form

January 11, 2010

Dear Student,

During Spring Semester 2010 the course Insect Biology ENTO 115 will be the subject of a research project designed to examine the effectiveness of alternative delivery methods and improve online instruction at the University of Nebraska – Lincoln. As an enrolled student in this course, you have the opportunity to contribute to this research project. The UNL Institution Review Board (Project ID: 10410) has approved this research project because the educational intervention and the possible implications of this research will likely improve the quality of online learning. Your willingness to participate in this research is crucial for the success of the research project. By participating in the research project, you agree to complete a couple of surveys which will take no more than 10-15 minutes and you might also be selected to participate in a short interview at the end of the semester.

If you would like to be exempt from this research project, please inform your course instructor by sending an email message in which you clearly state that you do not want to participate in the research study. If I do not receive an email message from you by January 18, 2010 I will assume that you have agreed to participate in this research study. If you choose to not participate in this project, your course grade will not be affected.

Sincerely,

Bojan Lazarevic, MA,  
Researcher

Tiffany Hang-Moss, PhD,  
Course Instructor

## Appendix I

# Syllabus Insect Biology - Spring 2010 ENTO 115

<p><b>Instructor:</b> Dr. Tiffany Heng-Moss Associate Professor Entomology Hall Department of Entomology Lincoln, NE 68583 Phone: 472-8708 E-mail: <a href="mailto:thengmoss2@unl.edu">thengmoss2@unl.edu</a></p>	
<p><b>Teaching Assistant:</b> Crystal Ramm 201 Entomology Hall Department of Entomology Lincoln, NE 68583 Phone: 472-2123 E-mail: <a href="mailto:crystal.ramm2@huskers.unl.edu">crystal.ramm2@huskers.unl.edu</a></p>	<p><b>Teaching Assistant:</b> Christina Doebling 201 Entomolgy Hall Department of Entomology Lincoln, NE 68583 Phone: 472-2123</p>
<p><b>Important Websites:</b> <b>Entomology Department Web Site:</b> <a href="http://entomology.unl.edu">http://entomology.unl.edu</a> <b>Blackboard:</b> <a href="http://my.unl.edu/">http://my.unl.edu/</a></p>	

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<a href="#"><u>Textbooks</u></a>	<a href="#"><u>Office Hours</u></a>	<a href="#"><u>Course Information</u></a>
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(Click on the areas above for more detail)

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## Technical Requirements

### Technical Requirements

In order to take this course, you must have:

1. E-mail
  2. An Internet connection (Netscape 3.01 or higher and Internet Explorer 4.0 or higher)
  3. Microsoft Word
  4. PowerPoint
  5. Adobe Acrobat Reader
  6. RealPlayer
- The technology skills you will need to succeed in this course are a basic familiarity with your Web browser, e-mail, word processing, and the ability to locate specific information on the Internet. You must also know or learn how to use Blackboard courseware.
  - Clicking [here](#) will take you to a link that will direct you to any of the plug-ins you might need for this course.

**Note:** When you click on the link above a new browser window will open. Be sure to close the window when you are done.

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## What You Will Learn

This course offers a general introduction to insects. Topics covered include insect diversity, insect morphology and physiology, insect ecology and behavior, and considerations of the economic and medical importance of insects. By the end of this course you should be able to recognize common insects that occur in Nebraska and understand their biology and unique adaptations.

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## Why Take This Course?

- Insects have an enormous impact on humans.
- Insects outnumber all other organisms.
- Insects are amazingly diverse.

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## TEXTBOOKS

There is no required text. References that you may find useful throughout the semester include the following introductory entomology textbooks:

O'Toole, C. 2002. Firefly Encyclopedia of Insects and Spiders. Firefly Books Inc.
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Turpin, F.T. 2000. Insect Appreciation, 2 <sup>nd</sup> edition. Kendall/Hunt Publishing Company.
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## Office Hours

We have “Virtual Office Hours” and will be available for interaction via phone, e-mail, or on the Blackboard site. However, feel free to contact us at your convenience. Our goal is to respond to your questions in a timely manner. At a minimum, e-mail and the discussion board on Blackboard site will be checked once a day. Response time for questions will typically be within 24 hours.

Grades for assignments and tests will be posted on the Blackboard site within one week of the due date.

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## Course Information

Insect Biology is likely to be very different from other university and high school courses that you have taken in the past. This course is an on-line course offered by the Department of Entomology, University of Nebraska-Lincoln. Since this is an on-line course and we do not meet on a regular basis, you will have to be willing to take control of your learning in this class. We have set deadlines for turning in assignments, taking exams, and viewing the lectures to help you stay on track.

Lectures can be accessed through Blackboard: (<http://my.unl.edu>). Blackboard also includes information on deadlines, assignments, and exams, as well as other important information pertaining to this course. Your first assignment is to view the course syllabus through Blackboard to learn more about how the course works and to provide you with an overview of the material we will be covering during the semester. After reviewing the syllabus, continue as outlined in the course syllabus lecture schedule.

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## Assignments

1. **Introductory Assignments** Purpose is to familiarize you with Blackboard, the library services, and how to send e-mail messages and attachment files. Each of these assignments is worth 5 points.
  - Blackboard Tutorial **January 19, 2010**
  - Six Noun Assignment
    - **January 19, 2010** post your nouns,
    - **January 26, 2010** respond to 10 of your classmates
  - Internet Assignment **January 21, 2010**
2. **Insect Pets** - Each of you will have two insect house-guests for the semester. You will be responsible for rearing these insects and writing 2 short scientific reports on your experience. Each scientific report should include appropriate observations on the development and growth of your insect pets.

### Due Date:

- Hissing Cockroach **February 23, 2010**
- Tobacco Hornworm **April 27, 2010**

**Website Assignments** -Throughout the semester you will be assigned several website assignments. These assignments are designed to provide you an opportunity to learn more about entomology and to reinforce concepts presented in class.

- . Classification Exercise (15 pts)
- a. Insects in the Sea (15 pts)
- b. Designer Insect (15 pts)
- c. How Does the Digestive System Work? (15 pts)
- d. Comparison of Human & Insect Physiological Systems (15 pts)
- e. Termite Activity (15 pts)
- f. Genetically Modified Mosquitoes (15 pts)
- g. Biotechnology - Bt Corn and Monarch Butterflies (15 pts)

### Information Regarding Assignments:

All assignments will be submitted either with the Blackboard Assignment tool or through the "Discussion Board" unless otherwise instructed. Website assignments will be due one week after they are assigned. Assignments are due on time. Late assignments will be down graded (2 points per day), and assignments more than a week late will not be graded. If circumstances arise that do not allow you to complete your assignments by the specified dates, please let us know.

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## Exams

### Hourly Exams:

There will be three hourly exams during the semester. Each exam will be a combination of short answers and multiple choice questions. No make up exams without prior approval or a written confirmation of a medical problem or family emergency!!!

### **Final Exam:**

The final exam will cover concepts from the entire semester. The final exam will have the same format as the hourly exams.

### **Cheating:**

The University of Nebraska-Lincoln has a policy about academic dishonesty, as indicated in the Student Code of Conduct (see Undergraduate Bulletin). As a student at UNL, you enjoy rights and protections under the code and are obligated to conduct yourself in compliance with the code. One area where students occasionally have some confusion regards plagiarism. The key concept here is misrepresenting the work of another as one's own.

As the Student Code of Conduct indicates, academic sanctions for misconduct subject to appeal are at the discretion of the instructor, and may include giving the student a failing grade for the course. In this course, the least penalty I will impose for misconduct is a one letter grade reduction in the course grade, but in most instances the penalty for cheating will be a failing grade in the course.

Click [here](#) for a link to the "Academic Services Handbook."

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## **Course Evaluation**

Test 1	100 points
Test 2	100 points
Test 3	100 points
Final Exam	150 points
Introductory Assignments	15 points
Insect Pets (2 pets @ 50 points)	100 points



Website Assignments (8 @15 points)	120 points
<b>Total</b>	<b>685 points</b>
** Letter grades will be assigned based on straight percentages of 100 - 90% A range, 89 - 80% B ranges, etc.	

Scale%		
100 - 97 A +	96 - 93 A	92 - 90 A
89 - 87 B +	86 - 83 B	82 - 80 B
79 - 77 C +	76 - 73 C	72 - 70 C
69 - 67 D +	66 - 63 D	62 - 60 D
	59 - Below F	

Scale Points		
685 - 661 A +	660 - 634 A	633 - 613 A
612 - 593 B +	592 - 565 B	564 - 545 B
544 - 524 C +	523 - 497 C	496 - 476 C
475 - 456 D +	455 - 428 D	427 - 408 D
	407 - Below F	

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## **General Education Program (ACE)**

Entomology 115 is a certified approved ACE outcome 4 course.

ACE outcome 4: Use scientific methods and knowledge of the natural and physical world to address problems through inquiry, interpretation, analysis, and the making of inferences from data, to determine whether conclusions or solutions are reasonable.

The learning outcome is embedded in the course through lectures, inquiry investigations, and insect pet projects. Lecture topics focus on conveying the content knowledge that is essential for student synthesis and application of insect biology to problem solving. The inquiry investigations and insect pet projects support problem-based learning and inquiry. Students enrolled in Insect Biology conduct at minimum three inquiry investigations related to insect biology. The inquiry investigations require students to draw on their specific content knowledge, develop testable hypotheses, test their hypotheses, analyze and interpret their data, and identify appropriate conclusions and implications. The two insect pet projects reinforce the inquiry approach by requiring students to review existing literature to learn about their specific insect pet, develop a set of hypotheses related to habitat selection, food preference, and development of their pet; test their hypotheses through observations and designing experiments to gather appropriate data; interpret their data sets; and ultimately make inferences from the data to determine whether their original hypotheses were accepted. At the end of each project, students prepare a scientific report that includes their hypotheses, methods, data sets (graphs and tables) and summaries, and conclusions.

Student understanding and application of content knowledge is assessed through three hourly exams and a final exam. Exams consist of short essays and multiple choice questions. Graded assignments used to assess the student's achievement of the scientific method component include scientific reports on their insect pets. The scientific reports gauge the student's ability to develop a testable hypothesis; collect data; present (graphs and tables), assess and analyze their data sets; identify appropriate conclusions; and effectively communicate their findings.

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## **Student Disabilities**

Any student in this course who has a disability that may prevent him or her from fully demonstrating his or her abilities should contact me as soon as possible, so we can discuss accommodations necessary to ensure full participation and facilitate your educational opportunity.

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## **Course Etiquette**

Be courteous to others when submitting assignments and participating in discussions. Offensive materials will be removed from the course web site. Students will be contacted if material is deemed inappropriate by any of the instructors.

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### Tentative Schedule

Date	Lecture Topic	Assignment Assigned	Assignment Due
<b>Module 1: Introduction</b>			
Jan 12	Review Course Syllabus	Blackboard Tutorial	
Jan 14		Six Noun Assignment Internet Assignment	
Jan 19	Lesson 1: Introduction to Insects <ul style="list-style-type: none"> <li>• Topic 1 Why Study Insects?</li> <li>• Topic 2 Reasons Why Insects are so Successful</li> </ul>		<b>Blackboard Tutorial</b>  <b>Six Noun Assignment: Post your nouns</b>
<b>Module 2: Classification of Insects and Other Arthropods</b>			
Jan 21	Lesson 1: Classification of Insects and Other Arthropods <ul style="list-style-type: none"> <li>• Topic 1 What is an Arthropod?</li> <li>• Topic 2 Classification System</li> </ul>	Classification Exercise	<b>Internet Assignment</b>

Jan 26	<p>Lesson 1: Classification of Insects and Other Arthropods</p> <ul style="list-style-type: none"> <li>• Topic 3 Types of Arthropods</li> <li>• Topic 4 Arachnids of Medical Importance</li> </ul>		<b>Six Noun Assignment: respond to 10 of your classmates</b>
<b>Module 3: Putting Order into the Insect World</b>			
Jan 28	<p>Lesson 1: Putting Order into the Insect World</p> <ul style="list-style-type: none"> <li>• Topic 1 Apterygotes</li> <li>• Topic 2 Crickets and Grasshoppers (Orthoptera)</li> <li>• Topic 3 Roaches (Blattaria)</li> </ul>	Cockroach Pet	<b>Classification Exercise</b>
Feb 2	<p>Lesson 1: Putting Order into the Insect World</p> <ul style="list-style-type: none"> <li>• Topic 4 Walkingsticks (Phasmida)</li> <li>• Topic 5 Mantids (Mantodea)</li> <li>• Topic 6 Hemiptera</li> </ul>		
Feb 4	<p>Lesson 1: Putting Order into the Insect World</p> <ul style="list-style-type: none"> <li>• Topic 7 Termites (Isoptera)</li> <li>• Topic 8 Lice and Fleas</li> <li>• Topic 9 Neuropterans</li> </ul>		
Feb 9	<p>Lesson 2: Aquatic Insects</p> <ul style="list-style-type: none"> <li>• Topic 1 Types of Aquatic</li> </ul>	Insects in the Sea	

	Insects <ul style="list-style-type: none"> <li>• Topic 2 Advantages &amp; Disadvantages</li> </ul>		
<b>Feb 11: Test 1</b>			<b>Insects in the Sea - 3 explanations to the Discussion Board</b>
Feb 16	Lesson 3: Putting Order into the Insect World <ul style="list-style-type: none"> <li>• Topic 1 Beetles (Coleoptera)</li> <li>• Topic 2 Butterflies and Moths (Lepidoptera)</li> <li>• Topic 3 Insect Conservation</li> </ul>		
Feb 18	Lesson 4: Putting Order into the Insect World <ul style="list-style-type: none"> <li>• Topic 1 Biology of Flies and Mosquitoes (Diptera)</li> <li>• Topic 2 Maggot Therapy</li> <li>• Topic 3 Internal Parasites</li> </ul>		<b>Insects in the Sea - one page summary</b>
Feb 23	Lesson 5: Putting Order into the Insect World <ul style="list-style-type: none"> <li>• Topic 1 Biology of Bees, Ants, &amp; Wasps (Hymenoptera)</li> <li>• Topic 2 Bee Venom Therapy</li> <li>• Topic 3 Killer Bees</li> </ul>		<b>Hissing Cockroach Scientific Report</b>
<b>Module 4: Insect Development, Morphology, and Physiology</b>			

Feb 25	<p>Lesson 1: Insect Development</p> <ul style="list-style-type: none"> <li>• Topic 1 Growth and Development</li> <li>• Topic 2 Tobacco Hornworm Overview</li> </ul>	Hornworm Pet	
Mar 2	<p>Lesson 2: Metamorphosis</p> <ul style="list-style-type: none"> <li>• Topic 1 Complete Metamorphosis</li> <li>• Topic 2 No Metamorphosis</li> <li>• Topic 3 Gradual &amp; Incomplete Metamorphosis</li> <li>• Topic 4 Other Types of Metamorphosis</li> </ul>		
Mar 4	<p>Lesson 3: Insect Structure and Function</p> <ul style="list-style-type: none"> <li>○ Topic 1 The Exoskeleton</li> <li>○ Topic 2 Molting Process</li> </ul>		
Mar 9	<p>Lesson 3: Insect Structure and Function</p> <ul style="list-style-type: none"> <li>• Topic 3 Insect Head</li> <li>• Topic 4 Insect Thorax</li> <li>• Topic 5 Insect Abdomen</li> </ul>	Designer Insect	
<b>Mar 11: Test 2</b>			
<b>Spring Break Mar 15 - 19</b>			
Mar 23	<p>Lesson 4: Internal Workings of Insects</p>	How Do These Systems Work?	<b>Designer Insect</b>

	<ul style="list-style-type: none"> <li>• Topic 1 Digestive System</li> <li>• Topic 2 Excretory System</li> <li>• Topic 3 Circulatory System</li> </ul>		
Mar 25	<p>Lesson 4: Internal Workings of Insects</p> <ul style="list-style-type: none"> <li>• Topic 4 Respiratory System</li> <li>• Topic 5 Nervous System (animation)</li> </ul>	Comparison of Human & Insect Physiological Systems	
<b>Module 5: Insect Behavior</b>			
Mar 30	<p>Lesson 1: Insect Mating and Reproduction</p> <ul style="list-style-type: none"> <li>• Topic 1 Insect Reproductive Systems</li> <li>• Topic 2 How to Find a Mate?</li> <li>• Topic 3 Mating Behaviors</li> <li>• Topic 4 Sperm Competition</li> </ul>		<b>How Do These Systems Work?</b>
Apr 1	<p>Lesson 2: Social Insects</p> <ul style="list-style-type: none"> <li>• Topic 1 Solitary to Social</li> <li>• Topic 2 Components of Eusocial Insects</li> </ul>	Termite Activity	<b>Comparison of Human &amp; Insect Physiological Systems</b>
<b>Module 6: Insects and Humans</b>			
Apr 6	<p>Lesson 1: Forensic Entomology</p> <ul style="list-style-type: none"> <li>○ Topic 1 What is Forensic Science?</li> </ul>		

	<ul style="list-style-type: none"> <li>○ Topic 2 Insects and Forensics</li> <li>○ Topic 3 Waves of Arthropods</li> <li>○ Topic 4 Analyzing a Crime Scene</li> </ul>		
<b>April 8: Test 3</b>			<b>Termite Activity</b>
Apr 13	<p>Lesson 2: Insects of Medical Importance</p> <ul style="list-style-type: none"> <li>• Topic 1 Broad Categories</li> <li>• Topic 2 Introduction to Disease</li> <li>• Topic 3 - Malaria</li> </ul>	Genetically Modified Mosquitoes	
Apr 15	<p>Lesson 3: West Nile Virus</p> <ul style="list-style-type: none"> <li>○ Topic 1 Overview of Disease</li> <li>○ Topic 2 Current Status and New Updates</li> </ul>		
Apr 20	<p>Lesson 4: Managing Insect Pests</p> <ul style="list-style-type: none"> <li>• Topic 1 What is a Pest?</li> <li>• Topic 2 IPM Steps</li> <li>• Topic 3 IPM Tactics</li> </ul>	Bt Corn and Monarch Butterflies	<b>Genetically Modified Mosquitoes</b>
Apr 22	<p>Lesson 5: Biotechnology</p> <ul style="list-style-type: none"> <li>○ Topic 1 What is Biotechnology</li> <li>○ Topic 2 Controversy over Biotechnology</li> </ul>		



Apr 27	Review		<b>Bt Corn and Monarch Butterflies</b>  <b>Tobacco Hornworm Scientific Report</b>
Apr 29	Dead Week		
<b>April 30, May 3, and 4: Final Exam</b>			

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## HELP!!

### Blackboard

Various student resources are available for any issues you experience with Blackboard® courseware and any other technical problems that might arise during the course of the semester. You can find a list of helpful resources under “Online Help Resources” on the “My UNL” Blackboard page.

UNL Blackboard Help Desk

Phone: (402) 472-3970

E-mail: [helpdesk@unl.edu](mailto:helpdesk@unl.edu)

### Library Services

UNL distance students have access to a tremendous resource-UNL’s Library Services

If you are using Blackboard, there is a tab at the top of the page, “UNL Library”-just click and you are there. This web site can also be accessed directly at: <http://iris.unl.edu/>

After you use one of the above options, you will be at the Iris Main Page:

Click on "Services", then, on the following page click on "Distance Education Services." At this point, you will be able to read about the various services UNL’s Library Services provide to distance learners.

For information about other services check out:

<http://www.unl.edu/libr/dept/subjname.html>

This page has information about the web request form, information about liaison librarian services, various delivery options (including web delivery), and much more.

Elaine Nowick, a liaison librarian, provides reference assistance for students in Entomology. She can be reached at (402) 472-4408 or through email ([enowick1@unl.edu](mailto:enowick1@unl.edu)).

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### **Student Informed Consent Note:**

During Spring Semester 2010 the course Insect Biology ENTO 115 will be the subject of a research project designed to examine the effectiveness of alternative delivery methods and improve online instruction at the University of Nebraska - Lincoln. As an enrolled student in this course, you have the opportunity to contribute to this research project. The UNL Institution Review Board has approved this research project because the educational intervention and the possible implications of this research will likely improve the quality of online learning. Your willingness to participate in this research is crucial for the success of the research project. By participating in the research project, you agree to complete a couple of surveys which will take no more than 10-15 minutes and you might also be selected to participate in a short interview at the end of the semester.

If you would like to be exempt from this research project, please inform your course instructor by sending an email message in which you clearly state that you do not want to participate in the research study. If I do not receive an email message from you by January 18, 2010 I will assume that you have agreed to participate in this research study. If you choose to not participate in this project, your course grade will not be affected.

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