THE RELATIONSHIPS BETWEEN TEACHERS' APPROACHES TO TEACHING, STUDENTS' PERCEPTIONS OF COURSE EXPERIENCES, AND STUDENTS' APPROACHES TO STUDYING IN ELECTRONIC DISTANCE LEARNING ENVIRONMENTS

by

DOHUN KIM

(Under the direction of ROBERT MARIBE BRANCH)

ABSTRACT

Students' approaches to studying have been one of important issues in distance education because distance-learning students spend most time studying independently and the ways students approach their studying are fundamental in determining the quality of learning outcomes. Although several researchers have attempted to explain the differential adoption in distance learning-students' approaches to studying, a relational study to associate students' approaches to studying with approaches to teaching of their instructors at distance has been rarely sought. Thus, this study was intended to examine the relationships between instructors' approaches to teaching, students' perceptions of course experiences, and students' approaches to studying in electronic distance learning environment.

The study used the Approaches to Teaching Inventory, the Approaches to Studying Questionnaire, and Course Experience Questionnaire, which were modified to suit the context of distance education. The findings were derived from the principal component factor analyses and analyses of variance of 82 distance courses (involving 82

instructors and 414 students) in the Electronic Campus of the Southern Regional Educational Board.

First, the results indicated that if an instructor was more oriented toward student-focused strategy with the intention of helping students' conceptual change, their students were less likely to adopt a reproducing orientation to studying. Conversely, if an instructor was more oriented toward teacher-focused strategy with the intention of transmitting information to students, students were less likely to report that they adopt a meaning orientation to studying. Second, the results revealed that students' meaning orientations to studying were linked to their perceptions of high quality teaching, a clear awareness of the goals, and independent choice over study topics, while reproducing orientations to studying were linked to their perceptions of a heavy workload and assessment encouraging memorization and recall. These findings indicate that students' approaches to studying are reactions to the teaching environment, whether students are in a distance course or a traditional setting. Some implications were discussed regarding the importance of distance instructors' changing role and instructional factors in (1) maximizing the chances that students will adopt a meaning orientation to studying and (2) minimizing the chances that they will adopt a reproducing orientation to studying.

INDEX WORDS: Teachers' Approaches to Teaching, Students' Approaches to Learning, Deep Approach, Surface Approach, Student Centered Approach, Teacher Centered Approach, Conceptions of Teaching, Learning Facilitation, Information Transmission, Distance Learning, Distance Education, Higher Education.

THE RELATIONSHIPS BETWEEN TEACHERS' APPROACHES TO TEACHING, STUDENTS' PERCEPTIONS OF COURSE EXPERIENCES, AND STUDENTS' APPROACHES TO STUDYING IN ELECTRONIC DISTANCE LEARNING ENVIRONMENTS

by

DOHUN KIM

B.S., The Hanyang University, Korea, 1994

M.S., The Hanyang University, Korea, 1996

A Dissertation Submitted to the Graduate Faculty of The University of Georgia in Partial Fulfillment of the Requirements for the Degree

DOCTOR OF PHILOSOPHY

ATHENS, GEORGIA

2002

THE RELATIONSHIPS BETWEEN TEACHERS' APPROACHES TO TEACHING, STUDENTS' PERCEPTIONS OF COURSE EXPERIENCES, AND STUDENTS' APPROACHES TO STUDYING IN ELECTRONIC DISTANCE LEARNING ENVIRONMENTS

by

DOHUN KIM

Approved:

Major Professor: Robert M. Branch

Committee: Roger B. Hill
Michael A. Orey
Thomas C. Reeves
John W. Schell

Electronic Version Approved:

Gordhan L. Patel
Dean of the Graduate School
The University of Georgia
May 2002

ACKNOWLEDGEMENTS

This dissertation is dedicated to my parents. With their love, prayer, and support, I have had a great adventure completing my doctoral degree in a foreign country. I also owe a great debt to my wife, SangHee Park. My work on this dissertation could never have been done at all without her relentless sacrifices and loving supports.

Many people assisted and encouraged me throughout the five year journey it has taken to complete my degree. I especially want to express my sincere thanks to my major professor, Dr. Robert Maribe Branch – an excellent mentor who has always guided and inspired me to become an independent researcher since I started my academic journey in the United States. Special thanks are in order for the members of my Dissertation Committee: Dr. Thomas C. Reeves, Dr. Michael A. Orey, Dr. John W. Schell, Dr. Roger B. Hill, and former Committee member, Dr. Kent Gustafson and Dr. Margaret Holt for their advice and encouragement.

I should also thank Dr. Wan Young Ryoo, my former major professor in Korea. He has warmly encouraged me to pursue my academic goal and paved the way to the abroad study in the United States. I am also grateful for the financial support from Hanyang University and The University of Georgia. Thanks also to my dear friends for their concerns and encouragement. To colleagues and friends I met in Athens, I thank them for enriching my life. Finally, all honors belong to my God who takes care of all my life.

TABLE OF CONTENTS

Page

LIST OF TABLES

LIST OF FIGURES

CHAPTER 1

INTRODUCTION

This study examines the relationships between teachers' approaches to teaching, students' perceptions of course experiences, and students' approaches to studying in electronic distance-learning environments. The following sections of this chapter will present the background of the study, the statement of problem, the purpose of the study, research questions, and the significance of this study in laying the groundwork for supporting teaching and learning in the current distance education environment.

Background

Distance education is one of the fastest growing instructional delivery systems in tertiary level education. Higher education institutions are offering increasing numbers of distance-learning programs in addition to or in lieu of traditional classroom environments (Kumari, 1999). Since the early distance educators first delivered a series of print-based instructions by correspondence to students separated by time and distance, students' approaches to studying have been one of the important issues in distance education because distance-learning students spend a significant amount of time studying independently, and the ways that students approach their studying are fundamental in determining the quality of their learning outcomes. Students' approaches to studying can be defined as incorporating both the way they go about their study and their reasons for adopting particular strategies (Prosser and Trigwell, 1999). A distinction between 'deep'

and ‘surface’ approaches to studying has been commonly identified from previous studies on students’ approaches to studying (Marton & Säljö, 1976; Entwistle & Ramsden, 1983; Biggs, 1987). This identification of deep and surface approaches to studying is considered highly relevant to distance education for two reasons: first, it comes from a study of reading, which still dominates most distance learning; second, the approach to studying has great operational importance and bearing on learning outcomes (Holmberg, 1995). Holmberg suggests that distance educators should encourage students’ deep learning or meaningful learning as an individual activity that is guided by non-contiguous means. He also puts a foundation of distance education around the concepts of meaningful learning and teaching as learning facilitation:

> Meaningful learning, which anchors new learning matter in the cognitive structures, not rote learning, is the center of interest [in distance education]. Teaching is taken to meaning facilitation of learning (p. 174).

As Holmberg’s (1995) statement indicates, many distance educators have acknowledged the importance of instructors’ changing roles in facilitating distance-learning students’ search for deep or meaningful learning. However, previous research in distance education about students’ approaches to studying attempted to explain the differential adoption in distance-learning students’ approaches to studying in relation to their personal characteristics such as age, gender, and prior educational experiences (e.g., Richardson, Morgan, & Woodley, 1999). A relational study to associate students’ approaches to studying with their instructor’s approaches to teaching at a distance has not been sought in distance education settings.

Lack of relational data may result from the traditional perspective that student learning in distance education is highly independent in nature and that there would be less interaction with their instructor than in a traditional educational setting. In fact, the independence of learning has been emphasized as an essential component in the industrial era of distance education where structural constraints (i.e., geographical distance) predominated transactional issues (i.e., teaching and learning), since distance education was dependent upon correspondence and the mass production and delivery of standardized learning packages (Peters, 1994). The term independent study has been widely used for describing distance education. Many educators have questioned the legitimacy of distance-learning course. (Garrison, 1990; Hayes, 1990). This is likely because educators view distance courses as inferior to the traditional classroom due to the lack of interactivity among participants. However, as new communication technologies appear, distance constraints may be disappearing as a significant challenge to designing worthwhile educational experiences (Garrison, 1999). The impact of new communication technologies on distance education has helped create virtual classrooms that electronically link instructor and students at various locations and where students may have the learning experiences equivalent to those of local students (Simonson, Schlosser, & Hanson, 1999). There is also empirical evidence that students in a virtual classroom can experience a higher level of interaction than the students in a traditional classroom (Gold & Maitland, 1999). Given the increased interactivity between students and instructors in distance education, it is a meaningful exploration to investigate the relations between instructors' approaches to teaching and students' approaches to studying in the current electronic distance-learning environment.

Approaches to Studying and Its Relation to Other Variables

Students in higher education often employ a number of different approaches to studying. Approaches to studying can be referred to as the way that students handle their learning tasks by adopting different strategies with different intentions (Biggs, 1999). There are two fundamental approaches: deep approach and surface approach. The conceptualization of deep and surface learning approaches has been generally consented to among the scholars who have extensively studied this area (e.g., Marton & Säljö, 1976; Entwistle & Ramsden, 1983; Richardson, 1990; Biggs, 1999). Deep learning can be referred to a learning approach characterized by an intention to seek meaning of the material being studied by using the material for elaboration and transformation. Surface learning can be referred to a learning approach characterized by an intention to perform a task with minimum trouble, while appearing to meet requirements. There is another important classification of students' approaches to studying. Richardson (1990) proposes two broad study orientations: (a) an orientation towards comprehending the meaning of the materials to be learned, and (b) an orientation towards just being able to reproduce those materials for the purposes of academic assessment. A meaning orientation can be seen as being comparable to a deep approach, while a reproducing orientation can be considered comparable to a surface approach.

These approaches to studying are generally seen as related to two factors: student characteristics and their perceptions of the learning and teaching situation. First, students' approaches to learning are affected by the characteristics of the students. Several researchers have studied students' approaches to studying in relation to such characteristics as their age (Richardson, 1994a; Sadler-Smith, 1996), gender (Richardson,

1993; Sadler-Smith, 1996), level of education (Richardson, 1998), cultural specificity (Watkins & Akande, 1992; Richardson, 1994b; Waktins & Regmi, 1995), epistemological beliefs (Saunders, Cavallo, & Abraham, 1999), thinking style (Zhang & Sternberg, 2000), prior knowledge (Beckwith, 1991), motivation (Entwistle, 1986), and their conceptions of learning (Dart et al., 2000). However, when students' approaches to studying are taken into account in relation to these characteristics, one misconception is that the approach to studying itself is regarded as a personality trait or a fixed learning style independent of their learning environment.

There seems to be little cause to support the belief that students' studying approaches are rigid or necessarily difficult to influence. While students' approaches to studying are not easily changed in a simple, direct fashion, the claim has been made that the approaches to studying adopted by students are determined in part by the perceptions that they form of the teaching in their courses. A study by Ramsden (1992) showed that five key learning environment factors (quality of teaching, goal and standard, workload, assessment, and independence of study) were associated with the adoption of particular approaches to studying. Biggs (1999) also argues that "deep and surface learning are not personality traits, as is sometimes thought, but reaction to the teaching environment" (p. 30). Therefore, students' approaches to studying can also be influenced by how teachers approach their teaching. A deep approach to studying might be associated with a constructivist teaching approach while a surface approach to studying is related to the traditional transmission model of teaching.

Teachers' Approaches to Teaching

Teachers' approaches to teaching are influenced by the conceptions of teaching they bring into their teaching contexts. Over the past two decades, researchers have documented the powerful effect of teachers' conceptions or beliefs on their teaching practices (Clark & Peterson, 1986; Pajares, 1992; Kember, 1997). Thus, there have been several studies that identified the conceptions of teaching held by higher education teachers. The conceptions identified by the various studies appeared to have a high degree of commonality in the dimensions (Kember, 1997). According to Kember, the conceptions that higher education teachers hold about their teaching can be arranged between two broad orientations. The first orientation is teacher-centered and focuses upon the communication of defined bodies of content or knowledge. The second orientation is student-centered and hence focuses on student learning.

Trigwell, Prosser, and Taylor (1994) also identified two fundamentally different approaches to teaching in a qualitative study of university teachers' approaches to teaching:

> *Information Transmission/Teacher-Focused Approach*: This approach is one in which the teacher adopts a teacher-focused strategy, with the intention of transmitting to the students information about the discipline. In this transmission, the focus in on facts and skills, but not on the relationships between them. The prior knowledge of students is not considered to be important and it is assumed that students do not need to be active in the teaching-learning process (p. 80).

> *Conceptual Change/Student-Focused Approach*: This approach is one in which teachers adopt a student-focused strategy to help their students change their world views or conceptions of the phenomena they are studying. Students are seen to have to construct their own knowledge, and so the teacher has to focus on what the students are doing in the teaching-learning situation. A student-focused strategy is assumed to be necessary because it is the students who have to re-construct their knowledge to produce a new world view or conception. The teacher understands that he/she cannot transmit a new world view or conception to the students (p.80).

There would be a logical relationship between teachers' conceptions of teaching, approaches to teaching, and possibly students' approaches to studying and outcomes. Given the assumption that students' learning approaches are closely related to their perceptions of teaching contexts such as teaching method, climates, and assessment modes, it seems reasonable to hypothesize the relationship between teachers' approaches to teaching and students' approaches to studying. However, this relationship has rarely been studied empirically. Only one study was found by the researcher's literature search which studied the relationship in traditional face-to-face classroom settings (Trigwell & Prosser, 1999). The findings from the study indicate that qualitatively different approaches to teaching are associated with qualitatively different approaches to learning. However, this relationship has not been explored in distance education settings. Therefore, this study seeks empirical evidence about the relationship in electronic distance-learning environments.

Statement of the Problem

Distance educators have acknowledged the importance of the instructors' role in helping distance-learning students adopt deeper approaches to studying. Although there are some occasions for which a reproducing orientation can be an effective strategy, such as in certain academic disciplines that require a large knowledge base of bare facts or specific procedural skills, a deep approach or meaning orientation to studying has generally been considered one of the avowed aims in distance education. Thus, there have been a number of studies that have investigated students' approaches to studying in both the traditional classroom and distance education settings. However, most studies about students' approaches to studying in distance education settings were conducted to investigate whether distance education students go about their learning in different ways than campus-based students (Harper & Kember, 1986; Figueroa; 1992; Koymen, 1992; Wong; 1992), resulting in no significant overall differences between the distance education students and campus-based students. The limited number of studies examined the relationships of students' approaches to learning with other variables (Ekins 1992a, 1992b; Richardson et al., 1999) in distance education settings. These studies are also limited in examining the relations to students' other characteristics and background experiences, such as language skills, study skills, age, gender, academic discipline, and prior education. A relational study to associate distance-learning students' approaches to studying with their perceptions of course experience or their instructor's approach to teaching could not be found in the researcher's literature review.

Despite the previous findings with campus-based students that students' differential adoption of approaches to studying are related to the teaching environment

(Marton et al., 1984; Richardson et al., 1987; Biggs, 1999; Prosser & Trigwell, 1999), the question remains whether these studies' conclusions can be generalized to the context of distance education. Although there has been a widely accepted assumption that distance educators' shifting from teacher-centered approaches to learner-centered approaches is vital in encouraging their students' adoption of deeper approaches to studying (Beaudoin, 1990; Rogers, 2000), the assumption has not been supported empirically due to the lack of research. Therefore, this study was intended to seek the empirical evidence for the relationships between teachers' approaches to teaching, students' perceptions of course experiences, and students' approaches to studying in electronic distance-learning environments.

Purpose of the Study

The primary purpose of this study was to examine how instructors perceive their approaches to teaching and how students perceive their course experiences and their approaches to studying in electronic distance-learning environments, and to determine the interrelationships between these perceptions. The secondary purpose was to examine students' approaches to learning in relation to other teaching contexts such as subject, course level, and the mode of mediated communication. Here, this study assumed that the mode of mediated communication has an effect on the relationship between teaching approaches and learning approaches because of its influence on the degree of interaction between teachers and students.

Significance of the Study

This study is significant in three major aspects. First, if there is a significant structural relationship between teachers' approaches to teaching and students' approaches to studying, the linkage will provide groundwork for improving teaching and learning in distance education. The findings from this study will be an important source of information in preparing faculty development programs for distance education courses. The programs of faculty development for distance education will have to emphasize the need to change the conceptions of teaching and learning in distance education in order to improve the quality of student learning.

Second, if there is a significant structural relationship between students' approaches to studying and their perceptions about course experiences regarding goal and standard, assessment, workload, and degree of freedom to choose study topic, the findings will help institutional staff and instructors design more effective structures for distance-learning programs to facilitate students' search for deep learning.

Third, most studies about students' approaches to studying in distance education settings were conducted outside of the United States, such as in the United Kingdom and Australia, where distance education has been popular for three decades (e.g., Harper & Kember, 1986; Richardson et al., 1999). This study focused on the distance education system in the United States and will help American distance educators understand the current status of their students' approaches to studying in distance-learning courses. Finally, if this quantitative study results in the significant findings about the relationship among constructs to be examined, qualitative studies will be needed to understand how

these relationships can be illustrated in the United States' electronic distance education environment.

Research Questions

This study aims to examine distance-learning students' approaches to studying in relation to (a) distance classroom teachers' approaches to teaching; (b) students' perceptions of course experiences, such as quality of teaching, goal and standard, workload, assessment, and independence of study; and (c) course contexts such as teaching subject, course level, and mode of mediated communication. The following research questions are explored in this study:

1. What is the structure of the relationship, if any, between teachers' approaches to teaching and students' approaches to studying in the electronic distance courses?
2. What is the structure of the relationship, if any, between students' perceptions about their course experiences and students' approaches to studying in distance-learning courses?
3. Is there a relationship between course subject and students' approaches to studying in distance-learning courses?
4. Is there a relationship between course level and students' approaches to studying in distance-learning courses?
5. Does the mode of communication in distance-learning courses affect the relationship between teachers' approaches to studying and students' approaches to studying?

The research questions are graphically represented in Figure 1.

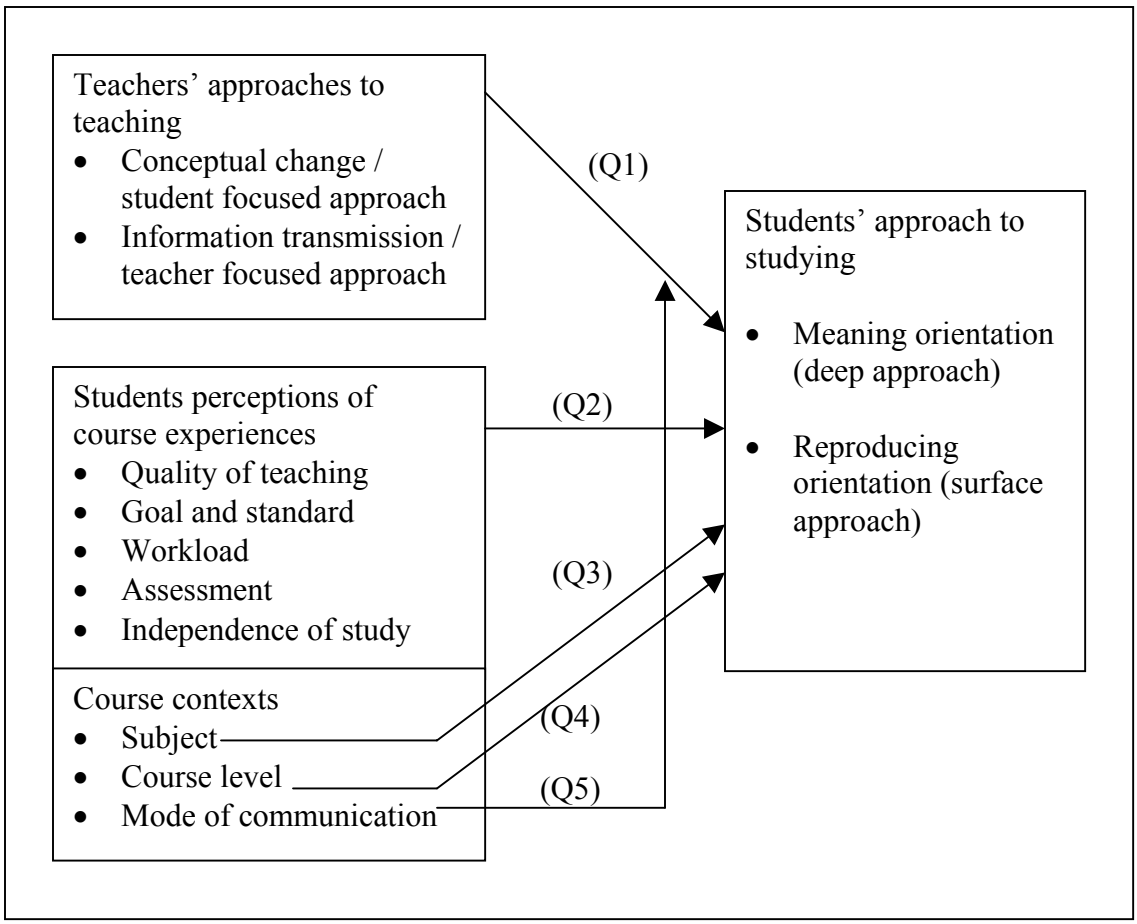


Figure1. Graphical representation of research questions.

CHAPTER 2

LITERATURE REVIEW

The purpose of this study is to examine the relationship between teachers' approaches to teaching, students' perceptions of course experiences, and students' approaches to studying in distance-learning courses. This review begins the discussion with an examination of the literature that has investigated these constructs. The first section deals with the literature that has investigated students' approaches to studying in traditional face-to-face classrooms and distance education. The second section reviews the various studies that have examined teachers' conceptions of teaching and their approaches to teaching in a higher education context. This literature review also covers the studies that deal with the relations among teachers' conceptions of teaching, approaches to teaching, and student learning. Finally, the discussion of these constructs, teachers' approaches to teaching and students' approaches to studying, will be followed by a discussion about recent issues in distance education, which is one of the fastest growing forms of higher education.

The literature used in this study was located by using the GALILEO database system at the University of Georgia. The primary databases include ERIC, EBSCOhost, Current Contents, PsycINFO, and Dissertation Abstracts. The search terms such as 'approaches to teaching', 'conceptions of teaching', 'teaching orientation', 'approaches to studying', 'approaches to learning', 'deep approach', 'surface approach', 'distance

education', 'distance learning', 'independence', 'interactivity' was used for this literature review.

Research into Students' Approaches To Studying

Students bring different studying approaches into their learning tasks in higher education. A student's approach to studying refers to the way he or she handles a learning task by adopting different strategies with different motives (Biggs, 1991). The term "approach to studying" incorporates both the way students go about their studying and their reasons for adopting particular strategies (Prosser and Trigwell, 1999). The ways students approach their learning have been considered fundamental in determining the quality of learning outcomes (Biggs, 1999). Although there is a general consensus in the research literature that students in higher education manifest a number of different approaches to studying (e.g., Marton et al., 1984; Richardson et al., 1987), the basic distinction between deep and surface approaches to studying has been commonly identified and used to describe students' approaches to learning.

Early Studies About Student Approaches to Studying

Research on approaches to studying in higher education first appeared in the 1970s in European literature. Marton, Säljö, and their research group at Gothenburg University in Sweden conducted a program of experimental investigations about how students approach reading tasks, initially in education (Marton and Säljö, 1976). Noel Entwistle and his colleagues explored student learning by interview and questionnaire across a wide range of disciplines (Entwistle and Ramsden, 1983). John Biggs in

Australia investigated the motives and strategies in tertiary students' studying processes and described three processes that students use in studying (Biggs, 1979).

The Gothenburg research group first used the terms surface approach and deep approach in describing the different ways that students went about learning tasks. In one of their earliest experiments, a group of students who were engaged in a reading task described what they had read in different ways. Marton and Säljö (1976) looked for reasons for the variation in what the individual students involved in the experiment said about their way of going about their reading tasks. Marton and Säljö identified two approaches that different students adopted for those tasks: surface approach and deep approach.

While the research of Marton and Säljö was concerned with how students go about reading isolated academic texts in a relatively artificial experimental situation, Biggs (1979) and Entwistle and Ramsden (1983) carried out similar studies in the normal academic studying situation. Biggs investigated the students' experiences of what they had done or were predisposed to do when studying generally. In investigating whether the mediation of students' study behavior might increase correlations between students' personality factors and academic performance, Biggs yielded three study processes: reproducing, internalizing, and achieving, each containing a combination of learning motives and learning strategies. However, Biggs (1987) later adopted the surface/deep terminology in his development of the Study Process Questionnaire.

Entwistle and Ramsden (1983) identified, through interviews with students in campus-based education, three orientations to studying (meaning, reproducing, and achieving), which combine elements of the context-related approaches to studying with

aspects of the personality of the student. Entwistle (1998) later notes that consideration of student learning on the basis of personality suggests too static a picture, as learning is necessarily reactive to the learning context.

Basic Dimensions of Approaches to Studying: Deep and Surface Approaches

As discussed above, each of these early research studies contributed to an understanding of the qualitative variation in students' approaches to studying. The constructs of deep and surface approaches to studying have been identified as two fundamental ways students handle their learning task. Marton & Säljö's (1976) described their findings in the following manner:

> We have found basically two different *levels of processing* to be clearly distinguishable. These two different levels of processing, which we shall call *deep-level* and *surface-level processing*, correspond to the different aspects of the learning material on which the learner focuses. In the case of surface-level processing the student directs his attention towards learning the text itself (the sign), i.e. he has a 'reproductive' conception of learning which means that he is more or less forced to keep to a rote-learning strategy. In the case of deep-learning processing, on the other hand, the student is directed towards the intentional content of the learning material (what is signified), i.e., he is directed towards comprehending what the author wants to say about, for instance, a certain scientific problem or principle (p. 7-8).

Although there have been many studies which focused on identifying the basic dimensions of students' approaches to studying (e.g., Entwistle and Ramsden, 1983;

Watkins; 1983; Biggs, 1987; Richardson, 1990), a general consensus from those studies has emerged reflecting Marton & Säljö's original conceptualization of deep level and surface level processing. Deep learning can be defined as a studying approach characterized by an intention to seek meaning of the material being studied by using the material to elaborate and transform. Surface learning can be defined as a studying approach characterized by an intention to perform the task with minimum trouble, while appearing to meet requirements. As a student adopts the surface approach, the material being studied is usually reproduced using routine procedure. Figure 2 shows general characteristics of students who adopt a deep approach and surface approach.

Deep learning student	• is interested in the academic task and derives enjoyment from carrying it out. • searches for the meaning inherent in the task. • personalizes the task, making it meaningful to his experience and to the real world. • integrates aspects or parts of task into a whole and sees relationships between this and previous knowledge. • tries to theorize about the task and form hypotheses.
Surface learning student	• sees the task as a demand to be met, a necessary imposition if some other goal is to be reached. • sees the aspects or parts of the task as discrete and unrelated either to each other or to other tasks. • is worried about the time the task is taking. • avoids personal or other meanings the task may have. • relies on memorization, attempting to reproduce the surface aspects of the task.

Figure 2. Comparison between general characteristics of deep learning students and surface learning students. (Adapted from Gordon, 1992, p. 2-3).

Biggs (1987) suggests third approach called an achieving approach, which can be defined as a studying approach characterized by an intention to archive high grades and marks by optimizing organization of time and effort. The archiving approach is sometimes referred to as a "strategic approach" (Entwistle, 1992). However, Biggs (1999) sees the concepts of surface approach and deep approach as more fundamental in determining the quality of learning outcomes and conceiving ways of improving teaching while the archiving approach is less relevant.

Meaning Orientation vs. Reproducing Orientation

There is another significant classification of students' approaches to studying but similar to the classification of deep and surface approach. Following Entwistle and Ramsden's (1983) work, Richardson (1990) proposes two broad study orientations: (a) an orientation towards comprehending the meaning of the materials to be learned, and (b) an orientation towards just being able to reproduce those materials for the purposes of academic assessment. This broad distinction has emerged from reexamining a formal Approaches to Studying Questionnaire (ASQ) developed by Entwistle and his colleagues (Entwistle & Wilson, 1977; Entwistle et al., 1979; Ramsden & Entwistle, 1981), which incorporated a variety of constructs from research into individual differences in student learning.

Meaning orientation can be seen as comparable to a deep studying approach, while reproducing orientation can be seen as comparable to a surface studying approach. Deep and surface approaches to studying are subsumed within a broader dichotomy between a meaning orientation and a reproducing orientation in Richardson's categorization. Developed in the process of devising a short version of ASQ, this

dichotomy contains the four subcategories which had been empirically identified with meaning orientation (i.e., deep approach, comprehension learning, relating ideas, and use of evidence and logic) and the four subcategories which had been empirically identified with reproducing orientation (i.e., surface approach, improvidence, fear of failure, and syllabus-boundness). This broad distinction has been adopted by the studies carried out in a variety of different systems of higher education including distance education programs in the United Kingdom.

Relations Between Approaches to Studying and Other Variables

The relationship of studying approach to other variables can be considered within a framework called the 3-P model. Biggs (1993) proposed a framework for understanding student learning, commonly referred to as the 3P model (presage, process, and product factors). Figure 3 shows this model that depicts a logical relationship between presage, process, and product in student learning.

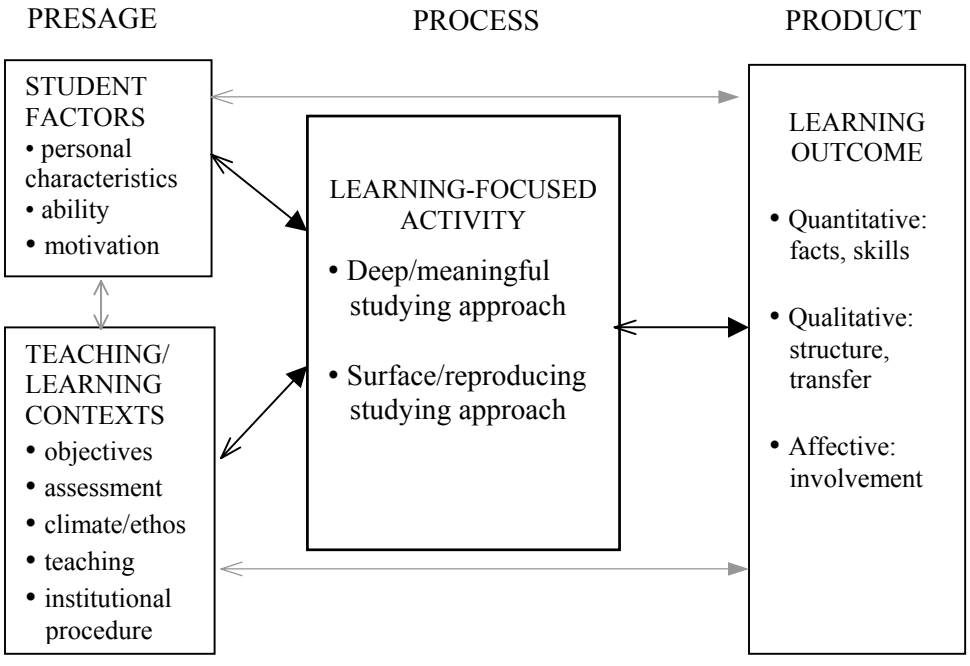


Figure 3. The 3-P model of teaching and learning. (Adapted from Biggs, 1999, p. 18).

The 3P model describes a cycle of events in which student characteristics, the teaching context, and students' learning processes are related to learning outcomes. According to this model, students' approaches to studying are affected by two major factors: characteristics of students and contexts of teaching and learning environments.

First, students' approaches to studying are affected by their characteristics. Several researchers have studied students' approaches to studying in relation to characteristics such as age (Richardson, 1994, Sadler-Smith, 1996), gender (Richardson, 1993; Sadler-Smith, 1996), educational level (Richardson, 1998), cultural specificity (Watkins & Akande, 1992; Richardson 1994; Waktins & Regmi, 1995), epistemological beliefs (Saunders, Cavallo, & Abraham, 1999), thinking style (Zhang & Sternberg, 2000), prior knowledge (Beckwith, 1991), motivation (Entwistle, 1986) and conceptions of learning (Dart et al, 2000). These studies revealed some associations of students' approaches to studying with those student characteristics:

- Mature college students tend to adopt a deep approach or meaningful orientation more often than younger students.
- No consistent evidence was found regarding significant gender differences.
- No consistent evidence was found about effects of educational level (undergraduate students and postgraduate students) on students' approaches to studying.
- The prior knowledge of subject area their academic outcomes but is not related to students' deep studying approach.
- Deep approaches to studying tend to be associated with executive, conservative, local, and monarchic thinking styles while surface approaches to studying are associated

with the legislative, judicial, liberal, and hierarchical thinking style based on Sternberg's (1988) theory of thinking style.

- The surface studying approach is related to extrinsic motivation, while the deep studying approach is related to intrinsic motivation.
- Students who have qualitative and experiential conceptions of learning are likely to use deep approaches to studying, whereas students who have quantitative conceptions of learning tend to use surface approaches to studying.

Second, the approaches to studying are related to the context of teaching and learning environments. When the approaches to studying are taken into account based on students' characteristics, one of the misconceptions is that studying approach itself is regarded as one of those characteristics. However, Biggs (1999) argues that "surface and deep approaches to studying are not personality traits, as is sometimes thought, but reaction to the teaching environment" (p. 30). Prosser and Trigwell (1999) also argue that students' approaches to studying are related to their perceptions of teaching and learning contexts. This means that students' approaches to studying are dependent upon the context, the content and the demands of the learning task (Marton et al., 1984; Richardson et al., 1987). Several researchers have studied the relation of students' perceptions of contexts with their approaches to studying (Beckwith, 1991; Trigwell & Prosser, 1991; Ramsden, 1992; Biggs, 1999), resulting in the following aspects that encourage surface approaches and deep approaches.

A surface approach is common in courses that:

- have a heavy work load and amount of course material;
- provide little opportunity and insufficient time to pursue subjects in depth;

- provide little choice over study topics;
- have an assessment system that provokes anxiety and mainly rewards reproduction of factual information.

A deep approach is common in courses that:

- provide a context in which students are motivated by the need to know;
- bring out the topic structure explicitly based on a well-structured knowledge base;
- emphasize depth of learning, rather than breadth of coverage;
- provide active learning and exploratory work in small groups;
- assess for structure rather than for independent facts.

These findings provide some implications for helping teachers create a learning environment to facilitate their students' adoption of a deep approach to studying. However, these findings about the relations of studying approach with students' perceptions of course contexts resulted from the studies with campus-based classroom students. The question remains whether similar conclusions apply to the context of electronic distance education in which the variety of transactions that occur between teachers and learners is supported by a variety of electronic communication tools.

Approaches to Studying in Distance Education

Since distance education has emphasized the autonomy and independence of learners, students' approaches to studying has been one of the important issues in distance education. Although the number of the studies is limited, there have been studies which investigated students' approaches to studying in distance education settings. Table 1 shows the studies about students' approaches to studying that were conducted in distance education settings.

Table 1

Studies of Students' Approaches to Studying in Distance Education Setting

Author(s)	*Date*	*Sample*	*Location*	*Purpose*
Morgan et al.	1980	357 distance students	U.K.	Factor analysis of ASI instrument for distance education students
Harper & Kember	1986	348 distance students and 431 campus-based students	Australia	- Comparison between two groups - Validation of instrument for distance students
Figueroa	1992			Comparison between distance education and traditional class settings
Köymen	1992	375 distance students and 329 campus-based students	Turkey	Comparison between distant and campus-based students
Wong	1992	89 on-campus students and 50 teleconferencing students		Comparison between two groups
Ekins	1992	450 native Cantonese speaking distance education students	Hong Kong/ Macao	Correlation between language skill levels and study approaches
	1992	549 undergratuates in distance-learning courses	Hong Kong/ Macao	Correlation between study skills and study approaches
Eastmond	1992		U.S.	- Unstructured interviews/participant observation - Findings of general studying approaches, including studying patterns, and personal approaches to studying
Gordon	1992	1843 distant education students	Australia	The nature of "deep" and "surface" approaches in distant learning
Richardson et al.	1999	2,288 distance-learning students	U.K.	- Comparison with previous campus-based students - Relations with age, gender, academic discipline and prior education.

These studies were conducted at the exploratory level to survey the general aspects of distance education students' approaches to studying and compare them with traditional classroom-based students' approaches to studying. One of the most common purposes in studying students' approaches to studying was to investigate whether distant education students go about their learning in different ways from campus-based students (e.g., Harper & Kember, 1986; Figueroa; 1992; Köymen, 1992; Wong; 1992). However, most studies found no significant overall differences between the distance education students and campus-based students. Another significant purpose was to validate the instruments to measure students' approaches to studying by factor analysis with distance education students (Morgan, Gibbs, & Taylor, 1980; Richardson, Morgan, & Woodley, 1999). Richardson et al. (1999), in the most recent research, used the Approaches to Studying Questionnaire (ASQ) to investigate 2,288 students taking distance-learning courses at the British Open University. These data were compared to the results from early research with campus-based students. Richardson et al. (1999) found that distance-learning students are commensurable in terms of their approaches to studying with campus-based students. This means that "approaches to studying in distance education can be characterized using the same concepts and constructs, and that the mainstream research literature based on the study of campus-based students will be valid for describing approaches to studying in distance education" (Richardson et al., 1999, p. 49). This finding supports this study's use a short version of the ASQ in measuring students' approaches to studying in distance education.

As shown in Table 1, there are very limited studies examining the relations of students' studying approaches with other variables (e.g., Ekins 1992a, 1992b; Richardson

et al., 1999). These studies are also limited in examining the relations of students' studying approaches to other students' characteristics and background experiences such as language skills, study skills, age, gender, academic discipline, and prior education. The research, which studied students' approaches to studying in relation to teaching contexts, could not be found in the researchers' literature search. The lack of those studies may result from the traditional perspective that independence of learning has been emphasized as the essence of distance education (Wedemeyer, 1977). However, recent emerging technologies to enhance the interaction between students and teachers, and even among students, are creating the need for distance educators and researchers to examine students' approaches to studying in relation to teaching contexts with a new perspective that sees interactivity of learning as the essential component of distance education (Parker, 1999). The issue of independence and interactivity as essential components of distance education will be revisited at the end of the literature review under a separate section.

Research into Teachers' Approaches to Teaching

Students' approaches to studying have been considered a reaction to the teaching environment, not as a kind of personality trait. Given the assumption that students' approaches to studying are closely related to their perceptions of teaching contexts such as teaching methods, climates and assessment modes, it seems to be reasonable to hypothesize a relationship between teachers' approaches to teaching and students' approaches to studying, which has been rarely empirically examined. Do university teachers really affect the way their students approach their studies? There have been studies which investigate higher education teachers' approaches to teaching in various

teaching contexts and subjects. This section examines the literature exploring how higher education teachers approach their teaching, how those approaches are related to their conceptions of teaching, and how the way in which teachers approach their teaching can be related to their students' learning.

Teachers' Approaches to Teaching

The term 'teaching approach' can be seen as having similarities with the term student studying approach, which is characterized as having motive and strategy components (Biggs, 1987). Pratt (1992) also regarded teaching approach as "a dynamic and interdependent trilogy of actions, intention, and beliefs" (p. 206). The way university teachers approach their teaching in higher education has been extensively studied by Trigwell, Prosser, and their colleagues. Trigwell, Prosser, and Taylor (1994), in a qualitative study with 24 university teachers, identified five different approaches to teaching. These approaches were constituted in terms of the strategies they adopt for their teaching and the intentions underlying the strategies. According to Trigwell et al. (1994), teachers' intentions are ranged from transmitting knowledge to helping students' conceptual change. Teachers' strategies are ranged from student-focused strategies to teacher-focused strategies. Each of the approaches can be briefly described as follows:

1. A teacher-focused strategy with the intention of transmitting information to students
2. A teacher-focused strategy with the intention of helping students acquire the concepts of the discipline
3. A teacher/student interaction strategy with the intention of helping students acquire the concepts of the discipline

4. A student-focused strategy with the intention of helping students develop their conceptions
5. A student-focused strategy with the intention of helping students change their conceptions

The teacher adopting toward the fifth approach is one who encourages self-directed learning, makes time for students to interact and discuss the problems they encounter, assesses to reveal conceptual change, and uses a lot of time to question students' ideas and develop a conversation with students. Contrarily, the teacher adopting toward the first approach will be one who assumes that students do not need to be active, focuses on transmitting facts and skills, and believes students have little or no prior knowledge of the subject they are teaching. These approaches adopted by teachers might be influenced by the ways they conceive of their teaching. The following section discusses how teachers in higher education conceive of their teaching and how those conceptions of teaching relate to their teaching approaches.

The Relation of Teaching Approach to Conceptions of Teaching

Studies of student learning have shown that students' approaches to studying are strongly correlated with their conceptions of learning. Likewise, teachers' approaches to teaching are related to the conceptions of teaching that teachers bring into their teaching contexts. Over the past two decades, researchers have documented the powerful effect of teachers' conceptions or beliefs on their teaching practices (Clark & Peterson, 1986; Pajares, 1992; Kember, 1997). If so, how do teachers in higher education conceive of their teaching?

There have been several studies which were committed to identifying the conceptions of teaching held by higher education teachers. The conceptions identified by the various studies appear to have a high degree of commonality in the dimensions. Kember (1997) reviewed 13 articles about the conceptions of teaching of university academics. Kember found that a number of largely independent studies have a high degree of consistency in identified categories. According to Kember, the conceptions identified in the various studies can be arranged under a framework ranging from a teacher-centered/content-oriented pole to a student-centered/learning-oriented pole. Figure 4 presents a comparison of conceptions of teaching which were identified by various studies.

How do teachers' approaches to teaching relate to these conceptions of teaching held by university teachers? Trigwell and Prosser (1996) explored the relations of teachers' approaches to conceptions of teaching. They reported that those teachers who conceive of teaching as *transmitting information* approach their teaching in terms of *teacher-focused strategies*. On the other hand, those teachers who conceive of teaching in terms of *helping students to develop and change their conceptions* approach their teaching in a *student-focused way*. However, there have also been concerns about inconsistency between teachers' conceptions and approaches. Murray and Macdonald (1997) reported a survey of instructors' teaching practice and perceptions of their role within a business school. According to this study, a substantial majority of respondents who saw themselves as either facilitators or student supporters showed the predominant use of lectures and tutorials with the purpose of disseminating information and applying or checking knowledge and understanding. Murray and Macdonald state this disjunction

Author (year)	Dimensions of conceptions of teaching Teacher-Centered Orientation ← → Learner-Centered Orientation						
Fox (1983)	Transfer	Shaping	Building	Traveling	Growing		
Dunkin (1990)	Structuring learning	Motivating	Encouraging activity and independence in learning	Establishing interpersonal relations			
Dall'Alba (1991)	Present information	Transmit information	Illustrate the application of theory to practice	Develop concepts, principle, and their interrelation	Develop capacity to be expert	Explore ways of understand-ing	Bring about conceptual change
Martin & Balla (1991)	Presenting information		Relating teaching to learning		Encouraging active learning		
Martin & Ramsden (1992)	Presenting content of process	Organizing content and/or procedures	Organizing learning environment	Facilitating understanding through engagement with content and process			
Pratt (1992)	Engineering	Apprenticeship	Development	Nurturing	Social reform		
Samuelo-wicz & Bain (1992)	Imparting information	Transmitting knowledge	Facilitating understanding	Changing students' conceptions	Supporting student learning		
Ramsden (1992)	Telling or transmission		Organizing Student Activity		Making learning possible		
Biggs & Moore (1993)	Transmitting knowledge		Orchestration of Teaching skills		Facilitating learning		
Prosser et al. (1994)	Transmitting concepts of syllabus	Transmitting the teachers' knowledge	Helping students to acquire concepts of the syllabus	Helping students to acquire teachers' knowledge	Helping students to develop conceptions	Helping students to change conceptions	
Murray & Macdo-nald (1997)	Imparting knowledge	Motivating	Facilitating	Student support			
Kember (1997)	Imparting information	Transmitting structured knowledge	Student teacher interaction/ apprenticeship	Facilitating understanding	Conceptual change/ intellectual development		

Figure 4. Dimensions of conceptions of teaching identified by previous studies

between stated aims and claimed educational practice is one of the mysteries of higher education. As Kember (1997) points out, there may be no automatic relationship between underlying beliefs and observable teaching approaches. Michael Prosser addresses the possibility of this inconsistency from a relational perspective (personal communication, March 28, 2001). Prosser said, "Teachers could say they are student oriented, but when confronted with a large noisy class they may adopt a teacher focused perspective. Then, there would be no relation." Thus, the possibility of inconsistency may have been caused by other environmental conditions and contextual constraints such as class size, institutionally predetermined structure, policies, and standards. Concisely speaking, teachers' approaches to teaching are obviously related to their underlying beliefs or conceptions of teaching, but also teaching approaches are situated to their specific teaching contexts.

Relations to Students' Approaches to Studying

While many researchers have studied about students' approaches to studying, there are a few studies associating students' studying approaches to their teaching context. Particularly, the relations of teaching approaches to students' studying approaches have been rarely evidenced in empirical studies (Trigwell & Prosser, 1999). Gow and Kember (1993) examined the relations between the teachers' conceptions of teaching and students' approaches to studying, assuming that this relationship is mediated by teaching approach as an intervening variable. This study used departmental scores for teachers' two main conceptions of teaching: knowledge transmission and learning facilitation. These departmental scores were related to measures for changes in students' approaches to studying from the Study Process Questionnaire (SPQ) (Biggs, 1987). The

results showed that underlying conceptions or orientations to teaching had a significant effect on students' studying approaches. Departments with high mean scores for the knowledge transmission orientation tended to depress the use of a deep approach to learning, while departments more attuned to learning facilitation were less likely to promote a surface approach to learning. Additionally, Gow and Kember suggest that the correlation observed between teaching orientation and the quality of student learning at the department level may be greater at the individual teacher level because the effect of the teacher on student ratings is much larger than that of the courses being taught.

Only one empirical study was found by the researcher's literature search that studied the direct link between teachers' approaches to teaching and students' approaches to studying in a face-to-face classroom setting. Trigwell and Prosser (1999) examined 48 first-year science classes, comprising a total of 46 teachers and 3956 students, in order to study the relationship at the individual classroom level. They used a topic-specific version of Biggs' SPQ and their own topic specific-version of the Approaches to Teaching Inventory (ATI). Analyzing data from factor analysis and cluster analysis of 48 classes, they found that "qualitatively different approaches to teaching are associated with qualitatively different approaches to studying" (p. 57). Students were likely to adopt a surface approach to the learning of their subject in the classes in which teachers have a focus on transmitting knowledge, while in the classes where students adopt significantly deeper approaches to studying, teachers reported they were likely to adopt approaches to teaching that were more oriented towards students and to changing the students' conceptions.

Distance Education and Emerging Technologies

Distance education is currently one of the fastest growing instructional delivery systems in higher education. While fostering students' deep learning has been considered one of the avowed aims in higher education (Richardson, 1999), there have been increasing research interests in students' approaches to studying in distance education settings. As briefly mentioned in the previous section, however, the emphasis on independence of learning as the essence of distance education (Wedemeyer, 1977) influenced the lack of research interest in examining if teachers have an impact on students' approaches to studying in distance education. Due to the rapid development of recent technologies, however, distance education has experienced dramatic changes in its theoretical focus from independence to interactivity of learning (Simonson et al., 1999; Parker, 1999), resulting in the changing roles of instructors.

The theoretical emphasis on interactivity of learning in distance education has been also supported empirically by some reports that the students in virtual classrooms experienced a higher level of interaction than students in traditional classes (Gold & Maitland, 1999). Given the increased interactivity between students and teachers in distance education, it was a meaningful exploration to examine if the virtual classroom teachers affect their students' approaches to studying in their distance learning.

This section examines briefly the history of distance education as the delivery technology has moved from correspondence to recent Internet technologies, and then how these changes in technology lead the focus of distance education from independence to interactivity of learning. Following the debates about the role of media in education, there will be a discussion about the changing role of teachers in distance education.

Brief History of Distance Education: From Correspondence Study to Virtual Classroom

The history of distance education can be considered a process of increasing the interactivity of learning at a distance as the delivery media have changed over the last century. In 1879, students and instructors were separated by time and distance for the first time when Anna Ticker delivered a series of shorthand lessons by postal service (Parker, 1999). It was the origin of correspondence programs in distance education history. Since then, numerous subsequent correspondence schools offered print-based instruction that provided the opportunity for students' self-directed, individualized learning, but were lack in interactivity (Parker, 1999).

In the 1960s, as radio and television became pervasive, distance education moved its delivery away from the postal service and began to utilize electronic media. In 1969, the establishment of the Open University in the United Kingdom marked the beginning of the use of electronic technology to supplement print-based instruction through well-designed courses. Although the delivery methodology had changed, the instructional focus still remained self-directed, independent study with little or no interaction among participants. With the rapid growth of new technologies and the evolution of systems for delivering information, the International Council for Correspondence Education changed its name to the International Council for Distance Education in 1982.

Today's Internet technologies provide students with instructions that include not only a high level of interaction among students and between student and instructor, but also immediate access to the information from anywhere on the globe. Keegan (1995) suggested that electronically linking instructor and students at various locations creates a virtual classroom. Virtual classrooms, which emerged as mere theoretical concepts and

innovative proposals a few years ago (Jacobson, 1994), are now viable and functional entities in the higher education environment (Spille, Stewart, & Sullivan, 1997). This brief history of distance education, along with the advances of distance learning technologies, shows the gradual process of acquiring the interactivity of learning at a distance. This practical change in distance education history has also affected the theoretical development of distance education.

From Independence to Interactivity of Learning in Distance Education

As seen above, the evolution of distance learning technologies from postal correspondence to recent Internet technology has not only significantly altered the practice of distance education, but also created the need to explore a new theory to guide the practice of distance education. The theories of autonomy and independence from the 1960s and 1970s have emphasized the independence of the learner as the essential component of distance education. These positions were argued by Wedemeyer (1977) and Moore (1973). The emphasis on independence was reflected in Wedemeyer's preference for the term 'independent study' for distance education at the college or university level. According to Wedemeyer, the characteristics of distance education systems should be:

- The student and teacher are separated.
- The normal processes of teaching and learning are carried out in writing or through some other medium.
- Teaching is individualized.
- Learning takes place through the student's activity.
- Learning is made convenient for the student in the student's own environment.

- The learner takes responsibility for the pace of learning, with freedom to start and stop at any time (Simonson et al., 1999, p.63).

Wedemeyer (1981) also believed that the development of the student-teacher relationship was key to the success of distance education, but he considered the separation of teaching from learning as the major characteristic of distance education, emphasizing learner independence and the adoption of technology as a way of implementing it.

This emphasis on independence in the theory development of distance education has moved to interactivity as the new essence of distance education. Factually, interactivity has been long considered to be a key to success in education (Dewey 1938; Vygotsky 1978). The theories of interaction and communication were formulated by Bääth (1982), Daniel and Maquis (1983), and Holmberg (1995). Particularly, Holmberg's theory of distance education is called "guided didactic conversation." Holmberg noted that his theory had explanatory value in relating teaching effectiveness to the impact of feelings of belonging and cooperation, as well as to the actual exchange of questions, answers, and arguments in mediated communication.

Holmberg (1995) offers four basic functions of interaction between teachers and students in distance education:

- To support students' motivation and interest by contact with an encouraging tutor and counselor.
- To support and facilitate student learning by students applying knowledge and skills acquired to tasks to be checked by and discussed with tutors as well as by tutors' comments, explanation and suggestions.

- To give students opportunities to develop their thinking while benefiting from tutors' criticism.
- To assess students' progress in order to provide them with an instrument by means of which they can judge their educational situation and needs, and by means of which marks can be awarded; the assessment of students' progress and the contact with them are also evaluation elements used more or less systematically for the purposes of modifying courses on the basis of students' needs and wishes. This applies to assignments set for submission and then corrected and commented on, as well as to unstructured communication (p. 104-105).

Garrison and Shale (1987) also include in their essential criteria for formulation of a distance education theory the elements of noncontiguous communication, two-way interactive communication, and the use of technology to mediate the necessary two-way communication.

Distance education history has shown that the two theoretical constructs of independence and interactivity of learning are at the center of essential components of distance education. As the technologies have developed over the last century, interactivity of learning has been emphasized as one of the major constructs in distance education research. However, these two constructs should not be considered to be at opposite sides. Rather, the interactivity of learning in distance education has been emphasized with the aims of supporting and facilitating students' autonomy and self-directed learning.

Types of Interaction in Distance Education

Interactivity has been defined in a variety of ways, based on the level of involvement by participants in the instructional experience, and all dependent on situational factors. For example, interaction can be defined as taking place when "the student is in two-way contact with another person(s) in such a way as to elicit from them reactions and responses which are specific to their own requests and contributions" (Daniel & Marquis, 1983, p. 32). Interaction can be something as simple as pushing the "play" button on the computer screen. Many terms like distance, independence, and interaction are frequently used in very imprecise and general ways, and each has acquired a multiplicity of meanings. Moore (1992) suggests that "as a minimum, distance educators need to agree on the distinctions between three types of interaction, which I labeled learner-content interaction; learner-instructor interaction; and learner-learner interaction" (p. 1).

The first type of interaction is interaction between the learner and the content or subject of study, which can be illustrated by a student reading a book or printed study materials. The second type of interaction is interaction between the learner and the instructor, who not only creates a program of content to be taught, but also attempts to motivate the student to increase self-direction and to assess the learning that has taken place. Moore (1992) operationalizes this second type of interaction as the core of all education, whether traditional or distance. During the third type, learner-learner interaction, students work together to discuss, problem-solve, and debate the material presented in the course.

Based on Moore's (1992) three types of interaction, this study can be seen as an effort to examine how learner-instructor interaction is related to the quality of learner-content interaction. Here, students' approaches to studying, which examine how students handle their studying materials, reflect the first type of interaction between learner and content.

The Role of Technology in Distance Education

One of the most obvious and important facts of distance education is that it is dependent on technology to exist as a means to educate. Since education takes place at a distance, some medium of communication must be employed to bridge that distance. However, the role of technology in distance education has been debated for years (Hackman & Walker, 1990; Smith & Dillon, 1999). Particularly, there is a debate about whether there are any unique attributes of media that can promote improved learning (Clark, 1994; Kozma, 1994). Kozma (1994) argued that the underlying attributes of media have a significant influence on teaching and learning. For instance, the use of text-based graphics as an advanced organizer can help learners organize information in meaningful ways so that the graphics are used to support cognitive processing. Following Kozma's perspective, the attributes of the recent communication technologies such as the Internet and World Wide Web can facilitate more interactive learning as follows:

- Asynchronous communication technologies provide opportunities for more frequent and timely interactions between students and faculty.

- Both synchronous and asynchronous computer-mediated communication technologies expand options for working in learning groups and encourage reciprocity and cooperation among students.
- Online teaching environments support active learning techniques such as reflective thinking, peer interaction, and collaborative learning activities.
- Computer-mediated communication has the capacity to support immediate instructional feedback; it is easy to send out new information, revisions to the syllabus or schedule, or immediate feedback on student work at any time instead of waiting for weekly class meetings.
- Information technology can make studying more efficient by providing immediate online access to important learning resources. Emphasis is placed on meeting instructional goals and performance objectives, rather than spending time in class.
- Use of information technology can assist students in improving their cognitive skills by providing examples of excellence and convenient, accessible, flexible forums for self and peer evaluation (Cravener, 1998).

However, technology itself may not necessarily facilitate effective and interactive learning. Clark (1994) argued that the medium is not inherently beneficial, of more importance, he suggested, is the structure of the learning experiences that occur within and via the medium. Clark also argued that no effect can possibly be demonstrated, because any improvement in learning that may accrue will come from the instructional design, not the medium that delivers the instruction. However, Clark acknowledges that

very different delivery technologies are necessary to provide efficient and timely access to appropriate learning environments. Clark's point is that media and their attributes have important influences on the efficiency of learning, but only the use of adequate instructional methods with those media will influence student learning.

It is obvious that technologies to bridge the distance between students and teachers lie at the core of distance education. The history of distance education has shown the important role of technology in developing effective distance education programs. Although distance education is heavily dependent on technology, the most important, but often overlooked, aspect is the appropriate instructional guides and interactive communications to be used by the distance educators in order to facilitate students' meaningful learning.

The Changing Role of Teacher in Distance Education

The increasing interests in distance-learning programs have required higher education faculty to rethink their instructional roles. Holmberg (1995) argued that distance education should revolve around a learner-centered system with teaching focused on facilitating learning. Based upon this assumption, he formed his theory for distance teaching:

> Distance teaching will support student motivation, promote learning pleasure and make study relevant to the individual learner and his/her needs, creating feelings of rapport between the learner and the distance education institution, facilitating access to course content, engaging the learner in activities, discussions and decisions and generally

> catering for helpful real and simulated communication to and from the learner (1989, p. 123).

Beaudoin (1990) suggests that many faculty have to make the adjustment to monitoring and evaluating the work of geographically distant learners rather than transmitting information. Rogers (2000) argued that most faculty conduct a teacher-centered classroom, but the success in cyberspace or a traditional setting requires behavioral modification of faculty shifting from teaching to learning orientations. Probably, these claims for teachers' shift from teacher-centered to learner-centered orientation might be suggested from the assumption that teachers' orientation about teaching and learning have an important impact on whether students adopt a meaningful and deep studying approach or rote and surface studying approach. However, this assumption has not been supported empirically in the distance education literature due to the lack of research.

Summary

This chapter has reviewed the literature concerning students' approaches to studying and teachers' approaches to teaching. It has also provided a brief history of and a discussion of recent issues in distance education. The first section discussed the two dimensions of deep and surface studying approaches, their relations to other variables, such as students' characteristics and teaching contexts, and previous studies about approaches to studying in distance education settings. The second section of the review focused on research by Trigwell, Prosser and their colleagues regarding approaches to teaching, previous research about conceptions of teaching as an influential factor on teaching approaches, and an exploration on the relation of teaching approach to student

learning. The final section described the brief history of distance education from correspondence course to the virtual classroom, theoretical consideration from independence to interactivity, and the role of technology and instructor in distance education.

To summarize, deep approach and surface approach are two major constructs in students' approaches to studying. These approaches to studying are related to two factors: student characteristics and the contexts of teaching and learning environments. Particularly, students' approaches to studying are dependent upon their perceptions of teaching and learning contexts. Trigwell, Prosser, and their colleagues, who have studied extensively the area of teachers' approaches to teaching, have identified two major orientations of teaching approaches: the information transmission/teacher focused approach and the conceptual change/student-focused approaches. Since deep or meaningful learning has been emphasized as an avowed aim in distance education and higher education, it's been assumed that distance educators' shift from teacher-centered approaches to learner-centered approaches is vital in encouraging their students' adoption of deep learning. However, this assumption has not been supported empirically due to the lack of research. A relational study to associate students' approaches to studying with their teachers' approaches to teaching has not been found in distance education literature. Thus, this study was primarily aimed at investigating the linkage between teachers' approaches to teaching and students' approaches to studying in distance education settings.

CHAPTER 3

METHODOLOGY

This chapter describes the research methodology for this study and is divided into five major sections. These five sections include research design, population and sample, instrumentation, data collection procedure, and data analysis. The first section presents an overview of the research design. Section two describes the sampling plan and procedures. Section three consists of a detailed description of the survey instrument. Section four describes the data collection procedures. The final section provides an overview of the data analysis plan.

Research Design

The primary purpose of this study was to determine if there is a relationship between teachers' approaches to teaching and their students' approaches to studying in electronic distance-learning courses. The secondary purpose was to examine students' approaches to studying in relation to their perceptions about course experiences, course subject, course level, and the mode of mediated communication.

The research design of this study can be classified in two ways with respect to the research objective and data collection. There are five research questions in this study. Because these five research questions seek to determine the degrees of relationships among the variables being explored, this study can be defined as a correlational research

design with respect to the research objective. Thus, this study follows the procedures of correlational research design set out by Charles (1998):

1. Variables whose relationship is to be explored are identified and clarified.
2. Questions or hypotheses are stated.
3. A sample is selected.
4. Measurements are obtained from sample members on each of the variables being explored.
5. Correlations between and among variables are computed to determine degrees of relationship (p. 265).

Regarding the type of data collection method, this study follows a cross-sectional survey design. This cross-sectional survey was selected because it serves as a productive means to collect data from a large sample and assists in studying relationships between the variables under study. This design is recommended when data are collected at one point in time from a predetermined population (Borg & Gall, 1989). Babbie (1990) describes a cross-sectional survey research design as follows:

> Data are collected at one point and time from a sample selected to describe some larger population at that time. Such a survey can be used not only for the purposes of description but also for the determination of relationships between variables at the time of study (p. 56).

Therefore, this study can be defined as a correlational research study using a cross-sectional survey design because the research objective is to examine the relationships

between variables and the data are collected from research participants during a single, relatively brief time period.

Participants

The survey participants were instructors and students currently engaged in distance-learning courses at the higher education level from southern regional states. The sampling frame of the survey population was drawn primarily from the lists of the electronic distance-learning courses from the Electronic Campus (http://www.electroniccampus.org) operated by the Southern Regional Education Board (SREB). The Electronic Campus provides a search engine for the courses and programs offered by accredited colleges and universities in the southern regional states. The researcher selected the participants from the search engine of the Electronic Campus based on the availability of instructor contact information. Each instructor in these electronic distance courses received an e-mail letter asking them to participate in the study. A copy of the e-mail letter is provided in Appendix E.

While random sampling is considered the most powerful sampling method for a survey research to ensure the representation of the target population (Borg & Gall, 1989), it was not appropriate for this study because participation for this survey was voluntary. Borg and Gall (1989) argued that "when some subjects refuse to participate in a study, the remaining subjects no longer constitute a random sample because persons who agree to participate are likely to be different from those who do not" (p. 227). Thus, using convenience sampling based on the availability of participants' contact information,

instructors and students from 478 distance-learning courses on the Electronic Campus were initially requested to participate in this survey.

Instrumentation

This study collected data from both instructors and students in distance-learning courses to examine the interrelationships between instructors' perceptions about their teaching approaches and students' perceptions about their studying approaches and their course experiences. The primary instruments used in this study were the Approaches to Teaching Inventory (Prosser & Trigwell, 1999) for instructors and the Approaches to Studying Questionnaire (Richardson, 1990) and Course Experience Questionnaire (Wilson & Lizzio, 1997) for students. Permissions to use and revise the Approaches to Teaching Inventory (ATI), Approaches to Studying Questionnaire (ASQ), and Course Experience Questionnaire (CEQ) were obtained from the developers of these instruments. Additionally, a short questionnaire to collect teaching context information was devised by the researcher and added to the ATI. The following sections describe these instruments in detail.

Approaches to Teaching Inventory

The Approaches to Teaching Inventory (ATI) is a self-reported questionnaire developed by Trigwell and Prosser (1996, 1999) to measure the ways teachers approach their teaching in a particular situation or context. The ATI consists of 16 items and contains two scales:

1) Information Transmission/Teacher-Focused (ITTF) approach
2) Conceptual Change/Student-Focused (CCSF) approach.

These two scales are described in Figure 5.

Teaching Approach	Description
Information Transmission / Teacher Focused Approach	This approach is one in which the teacher adopts a teacher-focused strategy, with the intention of transmitting to the students information about the discipline. In this transmission, the focus is on facts and skills, but not on the relationships between them. The prior knowledge of students is not considered to be important and it is assumed that students do not need to be active in the teaching-learning process.
Conceptual Change / Student-Focused Approach	This approach is one in which teachers adopt a student-focused strategy to help their students change their world views or conceptions of the phenomena they are studying. Students are seen to have to construct their own knowledge, and so the teacher has to focus on what the students are doing in the teaching-learning situation. A student-focused strategy is assumed to be necessary because it is the students who have to re-construct their knowledge to produce a new world or conception. The teacher understands that he/she cannot transmit a new world view or conception to the students.

Figure 5. Description of ITTF and CCSF approaches in ATI.
(Reprinted from Trigwell and Prosser, 1999, p. 62).

The two scales have intention and strategy sub-scales as shown in Figure 6. Eight items refer to the CCSF approach which is intended to change students' conceptions or ways of seeing things through a focus on the student. Four items refer to the intention of the CCSF approach and four to the strategy. The other eight items form a scale labeled the ITTF approach with four items referring to the intentions to transmit information and four to the use of a teacher-focused strategy to achieve that intention. These items are grouped as shown in Figure 6.

Sub-scale: Conceptual Change/Student-Focused (CCSF) Approach
Intention Items
• I feel that the assessment in this course should be an opportunity for students to reveal their changed conceptual understanding of the subject. • I encourage students to restructure their existing knowledge in terms of the new way of thinking about the subject that they will develop. • I feel that it is better for students in this course to generate their own notes rather than always copy mine. • I feel a lot of time or activity in this course should be used to question students' ideas.
Strategy Items
• In my interactions with students in this subject I try to develop a conversation with them about the topics we are studying *(electronically or in any other ways).* • I set aside some teaching time so that the students can discuss, among themselves, the difficulties that they encounter studying this subject. • In this course, I use difficult or undefined examples to provoke debate. • I make available opportunities for students in this subject to discuss their changing understanding of the subject.
Sub-scale: Information Transmission/Teacher-Focused (ITTF) Approach
Intention Items
• I feel it is important that this subject should be completely described in terms of specific objectives relating to what students have to know for formal assessment items. • I feel it is important to present a lot of facts to students so that they know what they have to learn for this subject. • I think an important reason for running teaching sessions *(or interactive sessions)* in this subject is to give students a good set of notes. • I feel that I should know the answers to any questions that students may put to me during this subject.

Figure 6. *(Continue)*

Strategy Items
• I design my teaching in this course with the assumption that most of the students have very little useful knowledge of the topics to be covered. • In this course, I concentrate on covering the information that might be available from a good textbook. • I structure this course to help students to pass the formal assessment items. • In this course, I only provide the students with the information they will need to pass the formal assessments.

Figure 6. Approaches to teaching sub-scales and items.

Michael Prosser, the co-developer of the Inventory, emphasized that this inventory was designed from a relational, not a cognitive, perspective (personal communication, March 28, 2001). In other words, the inventory was not designed to measure a teaching style independent of their teaching environment. Prosser said that this inventory measures a teacher's approach to teaching in relation to a specific teaching situation. This means that a teacher may have different scale scores depending on the teaching contexts or subject. Since the original ATI was developed from a qualitative study with 24 university teachers in a face-to-face classroom environment, this study adopted a revised version of the ATI that had been modified and validated to accommodate more flexible learning environments, such as the distance-learning courses offered by the British Open University. This revised version of the ATI was received from the developers with a permission to use. A copy of the ATI is provided in Appendix A.

Teaching Context Questionnaire

The Teaching Context Questionnaire (TCQ) was devised by the researcher to collect information about teaching subjects, assessment modes, and the modes of mediated communication. The items for assessment modes and communication modes include open-ended questions. The items for the modes of mediated communication are comprised of nine options in three categories: correspondence, fax, telephone, web site, e-mail, voice-mail, bulletin board, discussion list, online chatting system, audio conferencing system, and video conferencing system. In this study, the TCQ was used in conjunction with the ATI survey. A copy of the TCQ is provided in Appendix B.

Approaches to Studying Questionnaire

There are several versions of self-reported questionnaires to measure students' approaches to learning (Entwistle & Ramsden, 1983; Biggs, 1987; Richardson, 1990). Entwistle and his colleagues developed the Approaches to Studying Questionnaire (Entwistle & Wilson, 1977; Ramsden & Entwistel, 1981; Entwistle & Ramsden, 1983) to measure individual differences in terms of four major study orientations: meaning orientation, reproducing orientation, achieving orientation, and styles and pathologies. This original ASQ was tested by Richardson (1990) resulting in a shorter version of the ASQ. The short version of the ASQ consists of 32 items and contains two major scales: meaning orientation and reproducing orientation. These two major scales have four sub-scales respectively as shown in Figure 7.

Orientations / Subscales	Meaning
Meaning orientation	
Deep approach	Active questioning in learning
Inter-relating ideas	Relating concepts to other parts of a course
Use of evidence and logic	Relating evidence to conclusions
Comprehension learning	Ready to map out subject, think divergently
Reproducing orientation	
Surface approach	Preoccupation with memorization
Improvidence	Overcautious reliance on details
Fear of failure	Pessimism and anxiety about academic outcomes
Syllabus-boundness	Relying on staff to define learning tasks

Figure 7. Sub-scales of meaning orientation and reproducing orientation in approaches to studying.

A short version of the Approaches to Studying Questionnaire devised by Richardson (1990) was adopted for this study because the ASQ has been used in distance-learning environments (Richardson et al., 1999) and the short version of ASQ focuses on measuring meaningful and reproducing orientations, which are focuses in this study. Regarding the validity issue in using the ASQ to measure students' approaches to learning in a distance-learning environment, Richardson (1999) found that the distance-learning students are commensurable in terms of their approaches to learning with traditional campus-based students. This means "approaches to learning in distance education can be characterized using the same concepts and constructs [as those for campus-based students], and that the mainstream research literature based on the study of campus-based students will be valid for describing approaches to learning in distance

education" (p. 49). This finding supports the construct validity in using the ASQ to measure distance-learning students' approaches to learning. Additionally, for the sake of face validity, the researcher modified the short version of the ASQ slightly to suit the context of electronic distance-learning courses. For example, words like 'book' or 'lecture' were amended to refer to 'course materials' or 'course unit'. A copy of the ASQ is provided in Appendix C.

Course Experience Questionnaire

The Course Experience Questionnaire (CEQ), which was developed by Wilson and Lizzio (1997), was used to measure students' perceptions of their personal course experiences. This instrument was originally designed as a performance indicator of teaching effectiveness, at the level of whole course or degree, in higher education institutions (Ramsden, 1991).

Scale	Example of item
Good teaching	The instructor here normally gives helpful feedback on how you are going.
Clear goals	You usually have a clear idea of where you're going and what's expected of you in this course.
Appropriate workload	The sheer volume of work to get through in this course means you can't comprehend it all thoroughly (negatively scored).
Appropriate assessment	The instructor here seems more interested in testing what we have memorized than what we have understood (negatively scored).
Emphasis on independence	Students here are given a lot of choice in the work they have to do.

Figure 8. Scales of the course experience questionnaire.

This instrument consists of 23 items and is comprised five scales: (1) good teaching, (2) clear goals, (3) appropriate workload, (4) appropriate assessment, and (5) independence of study as the indicators of their course experiences. The scales of this questionnaire with associated identifying items are shown in Figure 8. A copy of the CEQ is provided in Appendix D.

Data Collection Procedure

The survey was administered entirely through electronic mail and an online survey site on the World Wide Web (WWW). Permission was granted from the appropriate review board to collect data from human participants.

The introductory letter was distributed via electronic mail, including an explanation of the study and a request to participate. All those contacted were notified that participation was on a volunteer basis and would take place through an identified web-based online survey site, which was located on the University of Georgia Department of Instructional Technology server. The main page of the site is provided in Appendix F. To promote full participation, the participants were also notified that they would be entered into a drawing for a monetary incentive.

This survey required the data input from both instructor and students because this study investigated the instructors' reports of their approaches to teaching rather than the students' perceptions of their instructors' teaching approach. Thus, the instructor participants were requested to complete the ATI and their students were requested to complete the CEQ and the ASQ via the customized online survey site on the WWW.

Pilot Survey

A pilot survey was conducted to formatively evaluate the web based survey design and procedures for this study. In particular, it was important to pre-estimate the return rate from the participants. There was also a need to examine the clarity of the questionnaires since the original questionnaires were modified to suit the context of distance education. In the summer of 2001, a pilot test was conducted by asking 30 distance course instructors from the Electronic Campus to participate in this pilot survey. The procedure of the pilot survey was similar to that of the actual survey described previously, except for the part of the drawing entering. Participants in the pilot study, however, were asked to provide additional information about the aspects of the survey, such as the comprehensibility of the questionnaires, the clarity of the survey introduction, and the appropriateness of time needed for survey completion. As a whole, participants reported that most items on the questionnaires were comprehensible, except for some inappropriate words in several items. Also, participants were able to complete the survey with the survey instructions provided. However, the return rate of the responses was unsatisfactorily low. Only 5 instructors and 11 students from 30 distance courses responded to the survey questionnaire. Thus, the researcher decided to administer a drawing to increase participation rates.

Data Analysis

The researcher used SPSS 10.0 for Windows to assist in the data analysis of the variables measured in this study. Descriptive statistics for each closed scale were calculated. Since the primary unit of analysis is at the individual class level, the class

means of students' ASQ scores were also computed in order to examine the correlations with their teachers' ATI scores. Inferential statistics were employed to analyze the relationships among variables in the proposed research questions. A principal component factor analysis was used to answer research questions 1 and 2, the primary research questions of this study. Factor analysis is usually known as a statistical technique for data reduction. However, it is also useful in searching for structure among a set of variables. Particularly, the principal component factor analysis provides direct insight into the interrelationships among variables and empirical support for addressing conceptual issues relating to the underlying structure of the data (Hair, Anderson, Tatham, & Black, 1998). The principal component factor analysis has also been used in previous studies examining the relationships between students' approaches to studying and other variables (Ramsden, 1992; Trigwell & Prosser, 1999). Analyses of variance were carried out on the scores on each scale of the ASQ using the factors of course subject and level in order to answer research questions 3 and 4. Table 2 summarizes the research questions of the study, the corresponding variables, and statistical procedures to analyze them.

Table 2

List of Research Questions, Variables, and Analysis Methods

Research Question	*Variables*	*Analysis Method*
1. What is the structure of the relationship, if any between teachers' approaches to teaching and students' approaches to studying in distance-learning course?	- ATI CCSF score - ATI ITTF score - ASQ MO score mean - ASQ RO score mean	Principal component factor analysis

Table2 *(Continue)*

Research Question	*Variables*	*Analysis Method*
2. What is the structure of the relationship, if any, between students' perceptions about their course experiences and students' approaches to studying in distance-learning course?	- CEQ quality of teaching - CEQ goal and standard - CEQ workload - CEQ assessment - CEQ independence - ASQ MO score mean - ASQ RO score mean	Principal component factor analysis
3. Is there a relationship between course subject and students' approaches to studying in distance-learning courses?	Group factor: Course subject - Liberal arts course - Science course Dependant Variables: - ASQ MO score mean - ASQ RO score mean	ANOVA on each ASQ scale using the factor of course subject
4. Is there a relationship between course level and students' approaches to studying in distance-learning courses?	Group factor: course level - Undergraduate student - Graduate student Dependant Variables: - ASQ MO score mean - ASQ RO score mean	ANOVA on each ASQ scale using the factor of course level
5. Does the mode of communication in distance-learning courses affect the relationship between teachers' approaches to studying and students' approaches to studying?	Group factor: mode of communication - asynchronous group - asynchronous plus synchronous group	Comparison of correlation coefficients and principal component factor matrixes between two groups

Note. ATI = Approaches to Teaching Inventory; CCSF = Conceptual Change/Student-Focused; ITTF = Information Transmission/Teacher-Focused; CEQ = Course Experience Questionnaire; ASQ = Approaches to Studying Questionnaires; MO = Meaning Orientation; RO = Reproducing Orientation.

CHAPTER 4

RESULTS

This chapter presents the results of this study regarding distance-learning students' approaches to studying in relation to (a) their instructors' approaches to teaching, (b) students' perceptions of course experiences, and (c) course contexts. Here, students' perceptions of course experiences are expressed as their opinions about the quality of teaching, course goals and standards, workload, assessment, and opportunity for independent study. Course context is expressed as relevance of the course subject and course level. Additionally, this study examined if the mode of communication affects the degree of the relationship between teachers' approaches to teaching and students' approaches to studying. The chapter will first report the descriptive results of the survey and then report the outcomes regarding the five research questions.

Descriptive Results

Participants

Eighty-two instructors and 414 students from 82 distance-learning classes completed the surveys. The return rate was calculated at the class level because this study required the data input from both instructor and students in the distance-learning course. Instructors and students in 478 courses were initially requested to participate in the survey. However, 67 courses among them appeared ineligible for this study because of invalid email addresses and course cancellations.

Eight-two courses had participation from both the instructor and the instructors' students, and thus formed the sample from which this study was conducted, indicating 20% return rate at the class level. This relatively low return rate might result from the unique survey design that required gathering the data from both instructors and students, using class as the sampling unit.

Table 3

Participant Demographics

Number of classes	Subject		Course level		Instructor		Student					
							Gender		Subject		Course level	
	Liberal Arts	Science	U	G	M	F	M	F	Liberal Arts	Science	U	G
82	44	38	70	12	35	47	81	333	269	145	375	39

Note. U = undergraduate; G = graduate; M = male; F = female.

As seen in Table 3, 82 participant classes consisted of 82 instructors and 414 students. Forty-four distance courses were classified as liberal arts degree courses with 269 student respondents and 38 courses as science degree courses with 145 student respondents. The 'liberal arts' subject area included courses that involve business, education, English, fine art, geography, history, journalism, music, philosophy, sociology, or philosophy. The 'science' subject area included course that involve biology, chemistry, computer science, engineering, mathematics, medicine, or physics. Seventy courses were at the undergraduate level with 375 student respondents and 12 courses at the graduate level with 39 student respondents. Within these classes, 47 instructors were female and 35 instructors were male; 375 students were female and 39

students were male. The average number of student respondents per class was about 5. Table 4 shows how the 414 student respondents were spread across the 82 classes participated in this study.

Table 4

Range of Student Participation per Class

Number of student respondents	Classes	Cumulative
1	13	13
2	13	39
3	10	69
4	10	109
5	10	159
6	5	189
7	3	210
8	4	242
9	5	287
11	2	309
12	3	345
15	1	360
16	2	392
22	1	414
Total	82	414

Reliability of the Instruments

The following three instruments were used in this study: (a) the Approaches to Teaching Inventory, (b) the Approaches to Studying Questionnaire, and (c) the Course Experience Questionnaire. The reliabilities of each scale of the instruments were measured using Cronbach's coefficient alpha. The reliability coefficients for these instruments are reported in Table 5.

Table 5

Reliability Coefficients (Cronbach's Alphas) of the Instruments

Instrument	Sub-scales	Cronbach's Alpha
ATI		**.62**
	CCSF approach	.70
	ITTF approach	.55
ASQ		**.77**
	Meaning orientation	.70
	Reproducing orientation	.78
CEQ		**.75**
	Good teaching	.85
	Clear goals	.87
	Appropriate assessment	.73
	Appropriate workload	.83
	Emphasis on independence	.69

Note. ATI = Approaches to Teaching Inventory; CCSF = Conceptual Change/Student-Focused; ITTF = Information Transmission/Teacher-Focused; ASQ = Approaches to Studying Questionnaire; CEQ = Course Experience Questionnaire.

Approaches to Teaching Inventory. The reliability coefficient for all 16 items of this inventory was .62. The Approaches to Teaching Inventory (ATI) contained two scales, an Information Transmission/Teacher-Focused (ITTF) approach and a Conceptual Change/Student-Focused (CCSF) approach. A Cronbach's coefficient alpha was also computed to determine the internal reliability of each scale. Reliability coefficients for the two scales of this inventory were as follows: CCSF approach, .70 and ITTF, .55.

Approaches to Studying Questionnaire. The reliability coefficient for all 32 items of this questionnaire was .77. The Approaches to Studying Questionnaire (ASQ) contained two scales, a meaning orientation to studying and a reproducing orientation to

studying. Reliability coefficients for each scale of this questionnaire were as follows: meaning orientation, .70 and reproducing orientation, .78.

Course Experience Questionnaire. The reliability coefficient for all 23 items of this questionnaire was .75. The Course Experience Questionnaire contained five scales: good teaching, clear goal, appropriate assessment, appropriate workload, and emphasis on independence. Reliability coefficients for each scale of this questionnaire were as follows: good teaching, 85; clear goals, .87; appropriate assessment, .73; appropriate assessment, .83; and emphasis on independence, .69.

This section reported the descriptive results of the survey including participant demographics and reliability of instruments used in this study. Based on these descriptive results, the following sections present the results regarding the five research questions.

Research Question #1: What is the structure of the relationship, if any, between teachers' approaches to teaching and students' approaches to studying in distance-learning course?

A principal components factor analysis was conducted to examine the structural relationship between a teachers' approach to teaching and the approaches to studying of the students in that teacher's class. The result of the principal components factor analysis produced a factor matrix that a teacher's conceptual change/student-focused approach to teaching is negatively associated with his or her students' reproducing orientation to studying, while a teacher's information transmission/teacher-focused approach to

teaching is negatively associated with his or her students' meaning orientation to studying.

The procedure of the principal components factor analysis is based on the initial computation of a complete table of intercorrelations among the variables under study. The correlation matrix is then transformed through estimation of a factor model to obtain a factor matrix. Table 6 shows the correlation matrix for the two scales of the ATI and the two scales of the ASQ.

Table 6

Correlation Matrix of Teacher's Approaches to Teaching and Students' Approaches to Studying variables

	CCSF	ITTF	MO	RO
CCSF	--	.089	.043	-.187*
ITTF		--	-.246*	.123
MO			--	.036
RO				--

Note. * denotes $p < .05$
CCSF = Conceptual Change/Student-Focused; ITTF = Information Transmission/Teacher-Focused; MO = Meaning Orientation to studying; RO = Reproducing Orientation to studying.

The correlation matrix revealed that two of the six correlations were significant at the .05 level. Although the overall significance of the correlation matrix, measured by the Bartlett test, was not significant, 10.87, $p > .05$, the structural relationship between the variables was further explored by means of principal components factor analysis.

The principal components factor analysis was conducted at the class level with 82 distance courses involving 82 instructors and 414 students. One thing to note is that this

research question investigated the teachers' reports of their approach to teaching rather than the students' perceptions of their teacher's teaching to show the relations between teachers' approaches to teaching and the approaches to studying of the students in the class of that teacher. The case to variable ratio (1:20.5) substantially exceeds the suggested ratio for such analyses (Hair, Anderson, Tatham, & Black, 1998). The first step was to select the number of components to be retained for further analysis. There are two methods for identifying the number of factors to be rotated: (1) taking the factors that have eigen-values greater than one and (2) by examination of the scree plot (Kline, 1994). Table 7 contains the information regarding the four possible factors and their relative explanatory power as expressed by their eigen-values. Based on this table, two factors were identified with an eigen-value greater than one.

Table 7

Information of Eigen-value and Variance Explained for the Extraction of Component Factors of the Teacher's Approach to Teaching and Students' Approaches to Studying Variables

Factor	Eigen-value	Percent of Variance	Cumulative Percent of Variance
1	1.262	31.559	31.559
2	1.182	29.551	61.109
3	.923	23.080	84.190
4	.632	15.810	100.000

The scree test also indicates that two factors with the latent root criterion value greater than 1.0 would be appropriate to be retained. Table 8 shows the results for two factors. The two factors retained represent 61.11% of the variance of the four variables.

Table 8.

Principal Components Factor Matrix of the Teacher's Approach to Teaching and Students' Approaches to Studying Variables

	Factors	
	1	2
Instructors' approaches to teaching		
CCSF approach to teaching		-.767
ITTF approach to teaching	.818	
Students' approaches to studying		
Meaning orientation	-.745	
Reproducing orientation		.773

Note. n = 82, loadings between -.30 and .30 deleted
The principal components explained 61.11% of the variance.

Factor 1, explaining 31.56% of the variance, shows substantial positive loadings on teachers' ITTF approach to teaching and negative loadings on students' meaning orientation variable. This suggests that students' meaning orientations to studying were negatively associated with their respective instructor's ITTF approach to teaching. Factor 2, explaining 29.55% of the variance, shows substantial negative loadings on teachers' CCSF approach to teaching and substantial positive loadings on students' reproducing orientation variable. The second factor suggests that students' reproducing orientations were negatively associated with their respective instructor's CCSF approach to teaching.

Research Question #2: What is the structure of the relationship, if any, between students' approaches to studying and their perceptions of course experiences in distance-learning course?

The second research question was intended to investigate the structural relationships between distance-learning students' approaches to studying and their perceptions of course experiences such as quality of teaching, clearness of goals and standards, assessment, workload, and independence of study at the individual level. The results of the principal components analysis produced a factor matrix indicating that students' meaning orientation to studying is linked to their perceptions of high quality teaching, a clear awareness of the goals, and independent choice, while a reproducing orientation to studying is linked to those students' perceptions of a heavy workload and assessment encouraging memorization and recall.

Table 9

Correlation Matrix of Students' Approaches to Studying and Perceptions of Course Experiences Variables

	1	2	3	4	5	6	7
1. Meaning orientation	--	-.002	.322**	.151**	.014	.060	.338**
2. Reproducing orientation		--	-.196**	-.209**	-.454**	-.529**	-.158**
3. Good teaching			--	.715**	.185**	.425**	.637**
4. Clear goals				--	.132**	.380**	.370**
5. Appropriate assessment					--	.467**	.161**
6. Appropriate workload						--	.356**
7. Emphasis on independence							--

Note. ** denotes $p < .01$

The analysis was also based on the correlation matrix between two ASQ scales and five CEQ scales as shown in Table 9. The correlation matrix revealed that 18 of the 21 relations were significant at the .01 level. The overall significance of the correlation matrix, measured by the Bartlett Test of Sphericity, was very high, 701.45, $p < 0.01$. Based on this correlation matrix, the principal components analysis was conducted at the individual level with 410 cases. Four of 414 students with incomplete data were treated as missing data. Thus, the case to variable ratio (59:1) was very high. The same procedure to select the number of components to be retained for further analysis was applied taking the factors that have eigen-values greater than one.

Table 10.

Information of Eigen-value and Variance Explained for the Extraction of Component Factors of Students' Approaches to Studying and Perceptions of Course Experiences Variables

Factor	Eigen-value	Percent of Variance	Cumulative Percent of Variance
1	2.909	41.556	41.556
2	1.495	21.359	62.914
3	.862	12.320	75.234
4	.588	8.395	83.629
5	.531	7.593	91.222
6	.412	5.885	97.107
7	.202	2.893	100.000

Based on Table 10, two factors were identified with an eigen-value greater than one. A scree analysis also suggested two factors. Table 11 shows a factor matrix that

presents the structure of how students' approaches to studying and their perceptions of course experiences are interrelated. The two factors retained represent 62.91% of the variance of the seven variables.

Table 11

Principal Components Factor Matrix of the Students' Approaches to Studying and Students' Perceptions of Course Experience Variables

	Factors	
	1	2
Students' approaches to studying		
Meaning orientation	.599	
Reproducing orientation		.812
Students' perceptions of course experiences		
Good teaching	.879	
Clear goal	.715	
Appropriate assessment		- .788
Appropriate workload	.336	- .766
Emphasis on independence	.771	

Note. n = 414, loading between -.30 and .30 deleted
The principal components explained 62.91% of the variance.

Factor 1, explaining 41.56% of the variance, shows substantial positive loadings on students' meaning orientation variable and students' perceptions of good teaching, clear goals, and emphasis on independence variables. This suggests that students' meaning orientations to studying were associated with students' perceptions of high quality teaching, a clear awareness of the goals, and independent choice over study topics. Factor 2, explaining 21.36% of the variance, shows substantial positive loadings on the students' reproducing orientation variable and substantial negative loadings on the

students' perceptions of appropriate workload and assessment. This factor suggests that students' reproducing orientations to studying were associated with students' perceptions of a heavy workload and assessment encouraging memorization and recall.

Research Question #3: Is there a relationship between teaching subject and students' approaches to studying in distance-learning courses?

The third research question examined if there would be statistically significant differences in the means between students in liberal arts courses and students in science courses on both meaning orientation and reproducing orientation to studying. The results of separate ANOVAs carried out on each scale of the ASQ showed that there was a statistically significant difference in the means between students in liberal arts subject courses and students in science subject courses on the reproducing orientation, while there was no statistically significant difference on the meaning orientation between two groups.

Each student was assigned to either the liberal arts subject group or science subject group. Originally, the data regarding subject area was collected using six categories of social science, humanity, art, natural science, engineering, and other. However, 28 distance course instructors classified their courses as other and 15 instructors did not respond. Thus, based on the nature of degree program that each course pursues, the researcher had to reclassify the subject area of each course as either 'liberal arts' or 'science.' The 'liberal arts' subject area included courses that involve business, education, English, fine art, geography, history, journalism, music, philosophy, sociology, or philosophy. The 'science' subject area included courses that involve

biology, chemistry, computer science, engineering, mathematics, medicine, or physics. Two hundred sixty-nine students were assigned to the liberal arts subject group, while 145 students were assigned to the science subject group. Table 12 shows mean scores and standard deviations for both subject groups on meaning orientation scores and reproducing orientation scores from the Approaches to Studying Questionnaire.

Table 12

Mean scores and Standard deviations for Students' Approaches to Studying by Subject

Group	n	Scale	M	SD
Liberal Arts	269	Meaning Orientation	3.70	.48
		Reproducing Orientation	3.14	.63
Science	145	Meaning Orientation	3.65	.57
		Reproducing Orientation	3.38	.57

Separate analyses of variance were carried out on the each scale of the ASQ. Table 13 shows a summary of ANOVA on each scale of the ASQ using the factor of subject area.

Table 13

ANOVA Summary for Teaching Subject Predicting Students' Approaches to Studying

		df	MS	F	p
Meaning Orientation	Between Groups	1	.207	.790	.375
	Within Groups	412	.262		
Reproducing Orientation	Between Groups	1	5.206	14.059	.000
	Within Groups	412	.370		

As seen in Table 13, there was no statistically significant difference in the means of students' meaning orientation to studying between two groups, $F(1, 412) = .79$, $p > .05$. However, there was a statistically significant difference in the means of students' reproducing orientation to studying between two groups, $F(1, 412) = 14.06$, $p < .01$. Table 13 shows that students in science-degree courses have higher scores than students in liberal arts-degree courses on reproducing orientation to studying.

Research Question #4: Is there a relationship between course level and students' approaches to studying in distance-learning courses?

The fourth research question examined if there would be statistically significant differences in the means between undergraduate and graduate students on both meaning orientation and reproducing orientation to studying. The results of separate ANOVA carried out on each scale of the ASQ showed that there were no effects of course level on both meaning orientation to studying and reproducing orientation to studying of distance-learning students.

Table 14

Mean Scores and Standard Deviations for Students' Approaches to Studying by Course Level

Group	n	Scale	M	SD
Undergraduate	375	Meaning orientation	3.68	.51
		Reproducing orientation	3.24	.65
Graduate	39	Meaning orientation	3.65	.57
		Reproducing orientation	3.05	.63

Table 14 shows means and standard deviations for both graduate and undergraduate students on meaning orientation scores and reproducing orientation scores from the Approaches to Studying Questionnaires. Separate ANOVAs were carried out on the meaning orientation and the reproducing orientation scores on the ASQ, using the factor of course level of distance-learning students. The validity of this analysis could in principle be open to question as the samples were of unequal size and the sample size of graduate students was fairly small. Analyses of variance, in such instances, are not robust with regard to violation of the assumptions of normality and homogeneity of variance (Glass et al., 1972). Thus, Levene's test was conducted to examine the homogeneity of variance. Levene's test indicated that variances were not significantly heterogeneous on both meaning orientation scores, 1.517, $p > .05$, and reproducing orientation scores, .146, $p > .05$. This means that the assumption on the homogeneity of variance was satisfied for the ANOVA test. Table 15 shows a summary of ANOVAs for course level on both meaning orientation and reproducing orientation.

Table 15

ANOVA Summary for Course Level Predicting Students' Approaches to Studying Variables

		df	MS	F	p
Meaning Orientation	Between Groups	1	.034	.130	.719
	Within Groups	412	.263		
Reproducing Orientation	Between Groups	1	1.335	3.515	.062
	Within Groups	412	.380		

ANOVA by course level did not reveal any significant effects on either students' meaning orientation or reproducing orientation to studying. There were no statistically significant differences in the means between undergraduate and graduate students on both meaning orientation, $F(1, 412) = .13$, $p > .05$, and reproducing orientation to studying, $F(1, 412) = 3.515$, $p > .05$.

Research Question #5: Does the mode of communication in distance-learning courses affect the degree of the relationship between teachers' approaches to teaching and students' approaches to studying?

The principal component factor analysis was conducted separately with the two groups classified by the modes of communication used in the course in order to examine if the mode of communication affected the structure and degree of the relationship between teachers' approaches to teaching and students' approaches to studying. The principal component factor analyses produced similar factor matrixes for both the asynchronous communication mode group and the asynchronous plus synchronous mode group, but the degree of relationship was slightly higher on the asynchronous plus synchronous group than the asynchronous communication group.

Eighty-two distance courses were classified into the asynchronous communication mode group ($n = 44$) and the asynchronous plus synchronous communication mode group ($n = 38$). Table 16 shows a comparison of correlation matrices for instructors' reports on their approaches to teaching and students' reports on their approaches to studying between the asynchronous group and the asynchronous plus synchronous group.

Table 16

Comparison of Correlation Matrices of Approaches to Teaching and Approaches to Studying Between Asynchronous Group and Asynchronous Plus Synchronous Group

	Asynchronous Group (n = 44)		Asynchronous plus Synchronous Group (n=38)	
	MO	RO	MO	RO
CCSF	.007	-.118	.085	-.333*
ITTF	-.232	.193	-.253	.022

Note. * denotes p < .05.
CCSF = Conceptual Chang/Student-Focused; ITTF = Information Transmission/Teacher-Focused; MO = Meaning Orientation to studying; RO = Reproducing Orientation to studying.

The correlation coefficients in the asynchronous plus synchronous communication group appeared to be a little stronger than the correlation coefficients in the synchronous communication group. Due to the small size of the sample for each correlation matrix, however, the only one correlation coefficient between teachers' CCSF approach and students' reproducing orientation in the asynchronous plus synchronous communication group was statistically significant at .05 level.

Table 17, produced by separate principal components analyses, shows the similar structural relationship between teachers' approaches to teaching and students' approaches to studying in both groups. However, the factors derived here are sample specific with little generalizability because case to variable ratios (11:1 for group 1 and 9.5: 1 for group 2) were not large and overall significance of correlations matrices for the principal component factor analyses was fairly low.

Table 17

Comparison of Principal Components Factor Matrixes of the Teachers' Approaches to Teaching and Students' Approaches to Studying Variables Between Asynchronous Group and Asynchronous Plus Synchronous Group

	Asynchronous Group		Asynchronous and Synchronous Group	
	Factors		Factors	
	1	2	1	2
Instructors' approaches to Teaching				
CCSF approach to teaching		-.680	.874	
ITTF approach to teaching	-.687	.402		.755
Students' approaches to Studying				
Meaning Orientation	.861			-.820
Reproducing Orientation		.738	-.714	

Note. Loading between -.30 and .30 deleted
Group1 (n=44): 58.18% of the variance explained.
Group2 (n=38): 65.87% of the variance explained.

Factor 1 of group 1 and factor 2 of group 2 show that the instructor's ITTF approach to teaching is negatively linked to students' meaning orientations to studying. Factor 2 of group 1 and factor 1 of group 2 show that instructor's CCSF approach to teaching is negatively linked to students' reproducing orientations to studying. The only difference between the two groups was, as shown in factor 2 of group 1, that the instructor's ITTF approach, if not statistically significant, was positively linked to students' reproducing orientation to studying in the asynchronous communication group.

Results Summary

The results regarding five research questions in this study are summarized as follows. First, distance-learning students' adoption of meaning orientation to studying

was negatively linked to their respective instructor's information transmission/teacher-focused approach to teaching, while students' reproducing orientation to studying was negatively linked to their respective instructor's conceptual change/student-focused approach to teaching. However, there was no indication about an expected positive association of students' meaning orientation to studying with their instructor's conceptual change/student-focused approach to teaching. Second, the results showed that students' meaning orientations to studying were lined to their perceptions of high quality teaching, a clear awareness of the goals, and independent choice over study topics while students' reproducing orientation to studying were linked to their perceptions of a heavy workload and assessment encouraging memorization and recall. Third, there was a significant effect of course subject on students' reproducing orientation to studying, but not on students' meaning orientation to studying. Distance-learning students in science degree courses had higher scores than students' in arts-degree courses on reproducing orientation. Fourth, there were no effects of course level on both meaning orientation and reproducing orientation to studying. Finally, the structure of the relationship between instructor's approaches to teaching and their students' approaches to studying was not significantly different between asynchronous communication mode group and asynchronous plus synchronous communication mode group, but the degree of relationship was a little higher, if not statistically significant, on the asynchronous plus synchronous group than the asynchronous communication group. The discussion and conclusions on these results are presented in the next chapter.

CHAPTER 5

DISCUSSION, CONCLUSIONS, AND LIMITATIONS

Introduction

The rapid growth of digital communication technologies in recent years has created virtual classroom environments in which teachers and students are linked electronically. Although new communication technologies may well have a profound influence in shaping a desirable distance-learning environment, the quality of students' educational experience will be defined by the transactional nature of the relationship among teacher, students, and subject matter (Garrison, 1999). Many distance educators have acknowledged the importance of the changing role of instructors because distance education revolves around a learner-centered system. There has been a widely accepted assumption that distance educators' shift from a teacher-centered approach to a learner-centered approach will be vital in encouraging their students' search for meaningful learning (Beaudoin, 1990; Holmberg, 1995; Rogers, 2000). However, a relational study to associate distance-learning students' approaches to studying with their teachers' approaches to teaching has been rarely sought in distance education settings. Thus, this study was conducted in the hope that its results might lay an empirical foundation about the transactional relationship between instructor's approaches to teaching, students' approaches to studying, and students' perceptions of course experiences in the current distance education system within the context of higher education.

The primary purpose of this study was to examine how instructors report their approaches to teaching and how students report their approaches to studying in electronic distance-learning environments, and to determine the interrelationship between these perceptions. The secondary purpose was to examine students' approaches to studying in relation to their perceptions of course experiences, such as quality of teaching, course goals and standards, workload, assessment, and opportunity for independent study. Additionally, this study examined students' approaches to studying in relation to other course context variables such as subject, course level, and mode of communication. The study assumed that the mode of communication might have an effect on the relationship between teaching approaches and studying approaches because of its influence on the degree of interaction between teachers and students. This chapter first discusses the findings of the study and then provides conclusions of the research. The conclusions include the summary of primary findings, implications for teaching and learning in distance education, and recommendations for future research.

Discussion of Findings

The findings of the research are discussed in four sections. They are (1) relationship between teachers' approaches to teaching and students' approaches to studying, (2) relationship between students' approaches to studying and their perceptions of course experiences, (3) effects of course subject and course level on students' approaches to studying, and (4) effects of communication mode on the relationship between teaching approaches and studying approaches.

Relationship between Teaching Approach and Studying Approach

The primary goal of this study was to investigate the widely assumed but rarely examined relationship between instructors' approaches to teaching and distance-learning students' approaches to studying in electronic distance-learning environments. Particularly, this primary question was sought by investigating the instructor's reports of their approach to teaching rather than students' perceptions of their teachers' teaching to show the relationship between teachers' approaches to teaching and students' approaches to studying.

The findings of the study indicated that if an instructor's approach to teaching was more oriented toward student-focused strategy with the intention of helping students' conceptual change, their students were less likely to adopt a reproducing orientation to studying. Conversely, if an instructor's approach to teaching was more oriented toward teacher-focused strategy with the intention of transmitting information to students, students were less likely to report that they adopt a meaning orientation to studying. If the tasks of distance teaching are to (1) maximize the chances that students will use a deep approach and (2) minimize the chances that they will use a surface approach, this study suggests that instructor's conceptual change and student-focused approach to teaching might minimize the chances that their students will adopt a reproducing orientation to studying while the chances that their students will adopt meaning orientation to studying might be minimized when their instructor tends to adopt knowledge transmission and teacher-focused approaches.

However, the results do not support an expected desirable association of students' meaning orientation to studying with their instructor's conceptual change and student-

focused approach to teaching. This finding will be widely open for interpretation and discussion. One possible explanation is that transactional distance may exist between instructors and students of the distance courses engaged in this study. Moore (1990) coined the concept of 'transactional distance' as opposed of 'physical distance' determined by geography. The transactional distance is determined by the amount of dialogue that occurs between the learner and the instructor. When an educational program has less student-teacher dialogue or interaction, the transactional distance will be greater. The greater transactional distance may then weaken the emergence of a desirable relationship between the learner and the instructor.

Furthermore, another possible interpretation is that the finding might show a problematic status about the transactional nature of teaching and learning in current distance education practice. Although the instructors who participated in this study report adopting approaches to teaching that are more oriented towards student-focused strategy with the intention of helping students' conceptual change, the instructors seemed to take a reactive role in controlling students' adoption of a reproducing orientation rather than a proactive role in facilitating students' adoption of a meaning orientation. The reactive role of distance teaching can be seen from Beaudoin's (1990) suggestion about the instructor's changing role in distance education. A decade ago, Beaudoin suggested that distance educators should have to make the adjustment to monitoring and evaluating the work of geographically distant learners rather than simply transmitting information. Although the role of monitoring and evaluating students' independent work is surely a very important task for distance teaching, online instructors need to take more proactive steps to facilitate personally meaningful and educationally worthwhile learning through

an active teaching presence as recent powerful communications tools such as collaborative computer conferencing are available for innovative instructional interventions.

Nevertheless, the results reported here provided clear empirical evidence that although students and instructors are separated physically in the distance education system, distance-learning students' approaches to studying are related to their respective instructor's approaches to teaching. This evidence not only supports the importance of the instructor's approach to teaching in facilitating students' meaning orientation to studying and discouraging students' reproducing orientation to studying but also gives a challenge to address the caution about the lack of a desirable relationship between teaching approach and studying approach in current distance education programs.

Relationship between Approaches to Studying and Perceptions of Course Experiences

The second research question examined students' approaches to studying in relation to their perceptions of course experiences. In previous research studies with campus-based students, the claim has been made that the approaches to studying adopted by students are determined in part by the perceptions that they form of the teaching in their courses (Trigwell & Prosser, 1991; Ramsden, 1992). In response to different teaching environments, the same student might adopt quite different studying approaches. The purpose of this question was to verify if the findings of the previous works with campus-based students can be generalized into the context of current distance education setting. The findings here clearly satisfied this purpose.

The more a distance course was perceived as having high quality of teaching (giving helpful feedback, being prepared and committed, and motivating students),

having clearly defined goals and structure, and emphasizing opportunities for independent choice over study topics, the more likely students were to adopt a meaning orientation to studying. On the other hand, students were more likely to report a reproducing orientation when they perceived their distance course as having a heavy workload and assessment encouraging memorization and recall. This basic pattern of relationships was evidenced in the correlations (see Table 8) among ASQ and CEQ measures across the total student sample and the following principal component factor matrix (see Table 10). These findings provided clear evidence that students' approaches to studying cannot be viewed in isolation from their course environment, indicating that students' approaches to studying are reactions to the teaching environment, whether students are in a distance course or a traditional setting.

Effects of Subject and Educational Level on Students' Approaches to Studying

This study also examined distance-learning students' approaches to studying in relation to course subject and course level in order to seek evidence concerning any possible effects of these course variables on approaches to studying in distance-learning students. First, regarding the effect of course subject on students' approaches to studying, the results showed that there was no difference between students in arts courses and those in science courses with respect to having a meaning orientation to studying. However, the science students produced higher scores than the arts students on reproducing orientation at statistically significant level. One possible interpretation for this is that students in science courses might pay attention to the surface properties of the materials to be learned because science courses may require students to acquire a large knowledge base of bare facts or specific procedural skills. In addition, it should be noted that some

courses classified into the sciences subject area included skill-based classes from engineering and computer science fields. Previous studies have also shown that approaches to studying vary across different academic disciplines. Harper and Kember (1986) obtained similar results to this study in both distance-learning and campus-based students that there was significant effect of academic subject on reproducing orientation. Ramsden and Entwistle (1981) reported that students taking arts courses were more likely than those taking science courses to manifest a deep approach, whereas the reverse was the case for a surface approach. Thus, the finding may set a limitation in interpreting the findings for the first and second research question because the effect of course subject on approaches to studying was not taken into account.

Second, regarding the effect of course level on students' approaches to studying, the results showed that there were no overall differences between undergraduate and graduate students on both meaning and reproducing orientation to studying. There have been different findings about the effect of course level on approaches to studying in both campus-based and distance-learning students. Gibbs' (1992) study suggested that students taking postgraduate courses were more likely to adopt a reproducing orientation to studying because these students might be forced to adopt undesirable study habits by virtue of an overloaded curriculum and the pressure of examinations. Vermunt and van Rijswijk (1988) noted a similar trend in distance-learning students. Considering that these studies were conducted a decade ago, however, there is evidence that this pattern can be avoided and even reversed by the introduction of an innovative program such as a problem-based curriculum (Vermetten, Lodewijks, & Lodewijks, 1999). Thus, these previous studies and the result of the present investigation, which found no effect of

course level on approaches to studying, support that students' approaches to studying are dependent upon the context, the content, and the demands of the learning task whether students are in undergraduate or graduate courses.

Effect of Communication Mode on the Relationship Between Teaching and Learning

This study also examined if the mode of communication used in the course affected the relationship between teachers' approaches to teaching and students' approaches to studying. Asynchronous and synchronous communications are considered to be the two basic communication modes in distance education. In this study, instructors from 44 courses reported that they were interacting with students using only asynchronous communication tools such as a web site, e-mail, bulletin boards, and discussion lists, while 38 instructors reported that they were using the combination of asynchronous and synchronous communication media, such as online chat room and video conferencing tools. Since each communication mode has its advantages in distance learning and teaching, it has been highly recommended to combine synchronous and asynchronous media in an attempt to capitalize on the benefits of both modes (Mason, 1998). Thus, the researcher assumed that the instructors' differential adoption in utilizing synchronous and asynchronous media might affect the transactional relationship between teaching approach and studying approach in distance education. As seen in Table 15, which compares the correlation coefficients between two groups, the overall degree of relationship between teaching approach and studying approach appeared to be a little stronger in the courses using both asynchronous plus synchronous media than the courses using only asynchronous communication media. This finding may indicate that in distance courses using both communication modes, there are some increases in instructor-

student interaction compared to distance courses using only asynchronous communication modes. However, the nature of the relationship between teaching approach and studying approach did not differ between the two groups. Even in distance courses using the combination of both communication modes, the desirable relationship between instructor's conceptual change and student-focused approach and students' meaning orientation to studying was not found. Although distance-learning technologies may well provide powerful benefits in shaping the desirable distance-learning environment, the technology itself may not change the nature of the teaching and learning transaction.

Conclusions

This research reported the results of the relationship between instructors' approaches to teaching, students' perceptions of course experiences, and students' approaches to studying in electronic distance-learning environments. This section finalizes the study by summarizing the primary findings of the study, providing the implications resulting from this study for teaching and learning in distance education, and suggesting recommendations for future research.

First, the results revealed that, based on the principal component factor analysis, an information transmission/teacher-focused approach to teaching is negatively associated with a meaning orientation to studying and that an conceptual change / student-focused approach to teaching is negatively associated with a reproducing orientation. This finding indicates that if an instructors' approach to teaching is more oriented toward student-focused strategy with the intention of helping students'

conceptual change, the chances that students will adopt a reproducing orientation to studying might be minimized, and that if an instructor's approach to teaching was more oriented toward teacher-focused strategy with the intention of transmitting information to students, their students might be discouraged in adopting a meaning orientation to studying. However, the desirable association of instructors' conceptual change/student-focused approach to teaching with students' meaning orientation to studying was not found in this study. This structure of the relationship between approaches to teaching and studying was the same regardless of the mode of communication used in the course. Lack of the desirable relationship between teaching and learning in current distance education settings was discussed based on Moore's (1990) transactional distance theory and then suggested that current online instructors need to take a more proactive role in facilitating students' search for meaningful learning thorough active teaching presence.

Second, this study also verified that students' meaning orientation to studying was associated with their perceptions of high quality teaching (giving helpful feedback, being prepared and committed, and motivating students), a clear awareness of the goals, and independent choice over study topics, while a reproducing orientation to studying was strongly associated with their perceptions of a heavy workload and assessment encouraging memorization and recall. This finding supports the outcomes of previous research studies into students' perceptions of five learning environment factors associated with approaches to studying, indicating that students' approaches to studying are reactions to the teaching environment, whether students are in a distance course or a traditional setting. These findings will also help distance educators create effective

distance-learning environments to facilitate students' search for deep or meaningful learning.

Third, the results of this study can provide an important implication in the development of faculty programs to improve instructors' instructional practices in distance education. Distance educators can expect that changing the ways they approach their instructional practice can influence the ways their distance-learning students approach their learning tasks. The ways that teachers approach their teaching will be influenced by the ways they conceive of teaching. Pratt (1992) regarded teaching approach as "a dynamic and interdependent trilogy of actions, intentions, and beliefs" (p. 206). Pajares (1992) states that "beliefs teachers hold influence their perceptions and judgment, which in turn affect their behavior in the classroom" (p. 307). If it is considered desirable that distance teaching should help students adopt a meaning orientation to studying rather than a reproducing orientation to studying, it seems to be important to direct initial attention towards the instructor's personal beliefs or conceptions of teaching in the preparation of faculty development programs for effective online teaching. Current faculty development programs have often focused on technical training for how to use technology in distance courses without challenging instructors' conceptions or assumptions about effective teaching. However, faculty development programs should go beyond teaching technology skills and begin to encourage faculty to confront their conceptions of teaching and how their conceptions of teaching affect their ways of using specific teaching strategies or distance-learning technologies. Without reflecting upon their conceptions of teaching, there will be no significant change in their instructional practice to help students' search for meaningful learning.

Finally, some recommendations are suggested for future research in examining the transactional nature of the relationship among teacher, students, and subject matter in distance education. First, there is a need for better instrumentation, particularly for measuring instructors' approaches to teaching in online distance-learning environments. Although the Approaches to Teaching Inventory used in this study was modified by the developer to suit the context of distance education, the instrument might have a limitation in measuring the ways instructors actually approach their online teaching because this instrument was not originally developed for the measure of approaches to teaching in distance education. Second, since this study showed an interpretable relationship between instructors' approaches to teaching and students' approaches to studying, it would also be valuable if there were follow-up qualitative studies to illustrate how the ways instructors approach their online teaching actually influence the ways distance-learning students approach their studying. Third, this study needs to be extended to examining students' approaches to studying in relation to their interaction with other students. According to Moore (1989), there are three types of interaction in defining the transactional nature of the relationship between instructor, learner, and subject matter in distance education: learner-content interaction, learner-instructor interaction, and learner-learner interaction. This study can be seen as an effort to examine how learner-instructor interaction is related to the quality of learner-content interaction. Thus, it would also be a valuable exploration to look into students' approaches to studying in relation to their interaction with other students – how learner-learner interaction is related to the quality of learner-content interaction.

Limitations of the Study

This study examined the relationship between teachers' approaches to teaching and students' approaches to studying by surveying the teachers' reports of their approaches to teaching rather than the students' perceptions of their teacher's teaching approach. Thus, this study required gathering the data from both instructors and students, using class as the sampling unit. There were several limitations to this type of survey. The study had 20% return rate at the class level. This relatively low return rate might result from the unique survey design that instructor and his or her students in each class should participate in the survey. In addition, the students' participation range per class was very diverse from only one student respondent to 22 student respondents per class, with average 5 student respondents per class. The continuing studies in this area will need to find out the way to have increased return rate of this type of survey and more student respondents per class in order to increase the credibility and effect size of the relationships observed.

While the results revealed some coherent and interpretable relationships between instructor's approaches to teaching, students' perceptions of course experiences, and their approaches to studying in current distance learning courses, the researcher suffered from the lack of contextual data, such as course design features, in interpreting the relationships observed. More adequate data collection to get the contextual information about each distance course participated in this study should have been administered. Thus, some interpretations and explanations of the findings from this research were based on the researcher's review of other researchers' theoretical framework and previous research.

REFERENCES

Bääth, J. (1982). Distance students' learning: Empirical findings and theoretical deliberations. *Distance Education*, *3*(1), 6-27.

Babbie, E. (1990). *Survey research methods* (2nd ed.). Belmont, CA: Wadsworth.

Beaudoin, M. (1990). The instructor's changing role in distance education. *The American Journal of Distance Education, 4*(2), 21-30.

Beckwith, J. B. (1991). Approaches to learning, their context and relationship to assessment performance. *Higher Education, 22*(1), 17-30.

Biggs, J. B. (1979). Individual differences in study processes and the quality of learning outcomes. *Higher Education, 8*(4), 381-94.

Biggs, J. B. (1987) *Study process questionnaire manual: Student approaches to learning and studying***.** Hawthorn, Australia: Australian Council for Educational Research (ERIC Document Reproduction Service No. ED 308 200).

Biggs, J. B. (Ed.). (1991). *Teaching for learning: The view from cognitive psychology*. Hawthorn, Australia: The Australian Council for Educational Research.

Biggs, J. (1999). *Teaching for quality learning at university*. Milton Keynes, UK: Society for Research into Higher Education & Open University Press.

Biggs, J. B., & Moore, P. J. (1993). *The process of learning*, (3rd ed). Englewood Cliffs, NY: Prentice Hall.

Borg, W. R., & Gall, M. D. (1989). *Educational research* (5th ed.). New York: Longman.

Charles, C. M. (1998). *Introduction to educational research* (2nd ed.). White Plains, NY: Longman.

Clark, C. M., & Peterson, P. L. (1986). Teachers' thought processes. In M. C. Wittrock (Eds.), *Handbook of research on teaching* (pp. 255-296). New York: Macmillan.

Clark, R. E. (1994). Media will never influence learning. *Educational Technology Research and Development*, *42*(2), 21-29.

Cravener, P. (1998). A psychosocial systems approach to faculty development programs. *The Technology Source*. [Online]. Available: http://ts.mivu.org/default.asp?show=article&id=68 (Last accessed March 27, 2002).

Dall'Alba, G. (1991). Foreshadowing conceptions of teaching. *Research and Development in Higher Education, 13,* 293-297.

Daniel, J. & Marquis, C. (1983). Interaction and independence: Getting the mixture right. *Teaching at a Distance, 15*, 29-44.

Dart, B. C. (1997). Adult learners' meta-cognitive behavior in higher education. In P. Sutherland (Ed.), *Adult learning: A reader* (pp. 30-43). London: Kogan Page.

Dart, B. C., Burnett, P. C., Purdie, N., Boulton-Lewis, G., Campbell, J., & Smith, D. (2000). Students' conceptions of learning, the classroom environment, and approaches to learning. *Journal of Educational Research, 93(4)*, 262-270.

Dewey, J. (1938). *Experience and education*. New York: Collier Macmillan.

Dunkin, M. J. (1990). The induction of academic staff to a university: Processes and products. *Higher Education, 20*, 47-66.

Eastmond, D. V. (1992). *Learning approaches to adult students taking computer conferencing courses*. Paper presented at the Annual Conference of the Northeastern Education Research Association. (ERIC Document Reproduction Service No. ED 352 938).

Ekins, J. M. (1992a). *Study approaches to distance learning students, studying in a second language*. Paper presented at the International Conference for Distance Education. (ERIC Document Reproduction Service No. ED 355 810).

Ekins, J. M. (1992b). *The development of study processes in distance learning students*. Paper presented at a meeting of the Asian Association of Open Universities. (ERIC Document Reproduction Service No. ED 355 402).

Entwistle, N. J. (1986). *Approaches to learning in higher education: Effects of motivation and perceptions of the learning environment*. Paper presented at the Annual Meeting of the American Educational Research Association, San Francisco.

Entwistle, N. J. (1992). Influences on the quality of students' learning implications for medical education. *South African Medical Journal*, *81*, 59-66.

Entwistle, N. J. (1998). Approaches to learning and forms of understanding. In B.C. Dart and G.M. Boulton-Lewis (Eds) *Teaching and Learning in Higher Education*. Melbourne, Australia: Australian Council for Educational Research.

Entwistle, N. J., Hanley, M., & Hounsell, D. (1979). Identifying distinctive approaches to studying. *Higher Education, 8,* 365-380.

Entwistle, N. J., & Ramsden, P. (1983). *Understanding student learning*. London, UK: Croom Helm.

Entwistle, N. J., & Wilson, J. D. (1977). *Degrees of excellence: The academic achievement game*. London, U.K: Hodder & Stoughton.

Figueora, M. L. (1992). Understanding students' approaches to learning in university traditional and distance education courses. *Journal of Distance Education, 7*(3), 15-26.

Fox, D. (1983). Personal theories of teaching. *Studies in Higher Education, 8*(2), 151-163.

Garrison, D. R. (1990). An analysis and evaluation of audio teleconferencing to facilitate education at a distance. *The American Journal of Distance Education, 4*(3), 13-24.

Garrison, D. R. (1999). Will distance disappear in distance studies? – A reaction. *Journal of Distance Education, 14*(2). [Online]. Available: http://cade.athabascau.ca/vol14.2/garrison.html. (Last accessed March 27, 2002).

Garrison, D. R., & Shale, D. (1987). Mapping the boundaries of distance education: Problems in defining the field. *The American Journal of Distance Education, 1*(1), 7-13.

Gibbs, G. (1992). Improving the quality of student learning. Bristol: Technical & Educational Services.

Gold, L., & Maitland, C. (1999, April). What's the difference: A review of contemporary research on the effectiveness of distance learning in higher education. *The Institute for Higher Education Policy*, 1-44.

Gordon, J. (1992). *Distance learners' approaches to studying: The nature of "deep" and surface" approaches reconsidered*. Paper presented at the World Conference of the International Council for Distance Education. (ERIC Document Reproduction Service No. ED 357 226).

Gow, L., & Kember, D. (1993). Conceptions of teaching and their relationship to student learning. *British Journal of Educational Psychology, 63*, 20-33.

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

Hair, J. F., Anderson, R.E., Tatham, R. L., & Black, W. C (1998). Multivariate data analysis (5th ed.). New Jersey: Prentice-Hall.

Harper, G., & Kember, D. (1986). Approaches to study of distance education students. *British Journal of Educational Psychology, 59,* 66-74.

Hayes, E. (1990). Adult education: Context and challenge for distance educators. *The American Journal of Distance Education 4*(1), 25-38.

Holmberg, B. (1989). *Theory and Practice of Distance Education*. New York: Routledge.

Holmberg, B. (1995). *Theory and Practice of Distance Education* (2nd ed.). New York: Routledge.

Jacobson, R. L. (1994). Scholars plan a 'virtual university', offering courses exclusively on the Internet. *The Chronicle of Higher Education*, 41, A20.

Keegan, D. (1995). Distance education technology for the new millennium: Compressed video teaching. Ziff Papiere 101. (ERIC Document Reproduction Service No. ED 389 931).

Kember, D. (1997). A reconceptualization of the research into university academics' conceptions of teaching. *Learning & Instruction, 7*(3), 255-275.

Kozma, R. B. (1994). Will media influence learning? Reframing the debate. *Educational Technology Research and Development*, *42*(2), 7-19.

Köymen, U. S. (1992). Comparison of learning and study strategies of traditional and open-learning system students in Turkey. *Distance Education, 13*, 108-117.

Kumari, D. S. (1999). *A study of higher education faculty implementing web-based teaching.* Unpublished doctoral dissertation, The University of Houston.

Martin, E., & Balla, M. (1991). Conceptions of teaching and implications for learning. *Research and Development in Higher Education, 13*, 298-304.

Martin, E., & Ramsden, P. (1992). *An expanding awareness: How lectures change their understanding of teaching.* Paper presented at the 1992 HERDSA Conference, Gippsland.

Marton, F., Hounsell, D., & Entwistle, N. (Eds.). (1984) The experience of learning. Edinburgh, UK: Scottish Academic Press.

Marton, F., & Säljö, R. (1976). On qualitative differences in learning: I. Outcome and process. *British Journal of Educational Psychology, 46*, 4-11.

Moore, M. G. (1973). Toward a theory of independent learning and teaching. *Journal of Higher Education, 44*, 66-69.

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

Moore, M. G. (1990). Recent contributions to the theory of distance education. *Open Learning, 5*(3), 10-15.

Morgan, A., Gibbs, G., & Taylor, E. (1980). *Students' approaches to studying the social science and technology foundation courses: Preliminary studies.* (Study Methods Group Report No. 4). Milton Keynes: Open University, Institute of Educational Technology. (ERIC Document Reproduction Service No. ED 197 639)

Murray, K., & Macdonald, R. (1997). The disjunction between lecturer's conceptions of teaching and their claimed educational practice. *Higher Education, 33,* 331-349.

Pajares, M. F. (1992). Teachers' beliefs and educational research: Cleaning up a messy construct. *Review of Educational Research, 62*, 307-332.

Parker, A. (1999). Interaction in distance education: The critical conversation. *Educational Technology Review, 12,* 13-17.

Peters, O. (1994). Distance education and industrial production: A comparative interpretation in outline (1973). In Keegan, D. (Ed.), Otto Peters on distance education: *The industrialization of teaching and learning*, 107-127. London: Routledge.

Pratt, D. D. (1992). Conceptions of teaching. *Adult Education Quarterly, 42*(4), 203-220.

Prosser, M., & Trigwell, K. (1999). *Understanding learning and teaching: The experience in higher education*. Milton Keynes, UK: Society for Research into Higher Education & Open University Press.

Prosser, M., Trigwell, K., & Taylor, P. (1994). A phenomenographic study of academics' conceptions of science learning and teaching. *Learning and Instruction, 4*, 217-231.

Ramsden, P. (1992). *Learning to teach in higher education.* London: Kogan Page.

Ramsden, P., & Entwistle, N. J. (1981). Effects of academic departments on students' approaches to studying. *British Journal of Educational Psychology, 51*, 368-383.

Richardson, J. T. E., Eysenck, M. W., & Warren Piper, D. (Eds.). (1987). Student learning: Research in education and cognitive psychology. Milton Keynes, UK: Society for Research into Higher Education & Open University Press.

Richardson, J. T. E. (1990). Reliability and replicability of the approaches to studying questionnaire. *Studies in Higher Education, 15*(2), 155-168.

Richardson, J. T. E. (1993). Gender difference in response to the approaches to studying inventory. *Studies in Higher Education, 18*(1), 3-13.

Richardson, J. T. E. (1994a). Mature students in higher education: I. A literature survey on approaches to studying. *Studies in Higher Education, 19*(3), 309-25.

Richardson, J. T. E. (1994b). Cultural specificity of approaches to studying in higher education: A literature survey. *Higher Education, 27*(4), 449-468.

Richardson, J. T. E. (1998). Approaches to studying in undergraduate and postgraduate students. *Studies in Higher Education, 23(2)*, 217-220.

Richardson, J. T. E. (2000). *Researching student learning: Approaches to studying in campus-based education and distance education*. Philadelphia, PA: Society for Research into Higher Education & Open University Press.

Richardson, J. T. E., Morgan, A., & Woodley, A. (1999). Approaches to studying in distance education. *Higher Education, 37*, 23-55.

Rogers, D. L. (2000). A paradigm shift: Technology integration for higher education in the new millennium. *Educational Technology Review, 13*, 19-27,33.

Sadler-Smith, E. (1996). Approaches to studying: Age, gender, and academic performance. *Educational Studies, 22*(3), p. 367-379.

Samuelowicz, K., & Bain, J. D. (1992). Conceptions of teaching held by academic teachers, *Higher Education, 24,* 93-111.

Saunders, G. L., Cavallo, A. L., & Abraham, M. R. (1999). *Relationships among Epistemological Beliefs, Gender, Approaches to Learning, and Implementation of*

Instruction in Chemistry Laboratory. Paper presented at the Annual Meeting of the National Association for Research in Science Teaching, Boston. (ERIC Document Reproduction Service No. ED 444 835).

Simonson, M., Schlosser, C., & Hanson, D. (1999). Theory and distance education: A new discussion. *American Journal of Distance Education, 13*(1), 60-75.

Smith, P. L., & Dillon, C. L. (1999). Comparing distance learning and classroom learning: Conceptual considerations. *The American Journal of Distance Education, 13*(2), 6-23.

Spille, H.A., Stewart, D. W., & Sullivan, E. (1997). *External degrees in the information age.* Phoenix, AZ: American Council in Education.

Sternberg, R. J. (1997). *Thinking styles*. New York: Cambridge University Press

Tang, C. (1998). Effects of collaborative learning on the quality of assignments. In B. Dart & G. Boulton-Lewis (Eds.), *Teaching and learning in higher education* (pp. 102-123). Melbourne: Australian Council for Educational Research.

Trigwell, K. & Prosser, M. (1991). Relating learning approaches, perceptions of context and learning outcomes, *Higher Education, 22*, 151-66.

Trigwell, K., Prosser, M., & Taylor, P. (1994). Qualitative differences in approaches to teaching first year university science. *Higher Education, 27*, 75-84.

Trigwell, K. & Prosser, M. (1996). Changing approaches to teaching: A relational perspective. *Studies in Higher Education, 21*, 275-84.

Trigwell, K., & Prosser, M. (1999). Relations between teachers' approaches to teaching and students' approaches to learning. *Higher Education*, 37, 57-71.

Vermetten, Y. J., Vermunt, J. D. & Lodewijks, H. G. (1999). A longitudinal perspective on learning strategies in higher education: different viewpoints towards development. *British Journal of Educational Psychology, 69*, 221-42.

Vermunt, J.D. & van Rijswijk, F.A.W.M. (1988). Analysis and development of students' skill in self-regulated learning. *Higher Education, 17*, 647-681.

Vygotsky, L. S. (1978). *Mind in society: The development of higher psychological processes.* Cambridge: Harvard University Press

Watkins, D. (1983). Depth of processing and the quality of learning outcomes. *Instructional Science, 12*, 49-58.

Watkins, D., & Akande, A. (1992). Assessing the approaches to learning of Nigerian students. *Assessment and Evaluation in Higher Education, 17*(1), 11-20.

Watkins, D., & Regmi, M. (1995). Assessing approaches to learning in non-western cultures: A Nepalese conceptual validity study. *Assessment and Evaluation in Higher Education, 20*(2), 203-12.

Wedemeyer, C. A. (1977). Independent study. In A. S. Knowles, (Ed). *The international encyclopedia of higher education*. Boston, MA: Northeastern University.

Wilson, K. & Lizzio, A. (1997). The development, validation, and application of the coure experience questionnaire. *Studies in Higher Education, 22*(1), 33-52.

Wong, S. L. (1992). Approaches to study of distance education students. *Research in Distance Education, 4*(3), 11-17.

Zhang, L., & Sternberg, R. J. (2000). Are learning approaches and thinking styles related? A study in two Chinese populations. *Journal of Psychology Interdisciplinary & Applied, 134(5)*, 469-479.

APPENDIX A

APPROACHES TO TEACHING INVENTORY

This inventory is designed to explore the way that academics go about teaching in a specific context and/or subject. This may mean that your responses to these items may be different to the responses you might make about your teaching in other contexts or subjects.

Background Information

1. University of College _____

2. Course Prefix and Title (required) _____

   (e.g., EIT770: Introduction to Instructional Technology)

3. Course level: Undergraduate ___ Graduate ___

4. Subject Area: Social science ___ Humanity ___ Art ___

   Natural science ___ Engineering ___

   Other (please specify) _____

5. Age: _____

6. Sex: Male ___ Female ___

For each item please circle one of the numbers (1-5). The numbers stand for the following responses:

1 - this item was **only rarely** true for me in this course.

2 - this item was **sometimes** true for me in this course.

3 - this item was true for me **about half the time** in this course.

4 - this item was **frequently** true for me in this course.

5 - this item was almost **always** true for me in this course.

Please answer each item. Do not spend a long time on each; your first reaction is probably the best one. Please try to answer in a manner that reflects the way your course really is rather than the way you think others might expect it to be. Your answers are completely confidential.

	During this course:	Only rarely				Almost always
1	I design my teaching in this course with the assumption that most of the students have very little prior useful knowledge of the topics to be covered.	1	2	3	4	5
2	I feel it is important that this course should be completely described in terms of specific objectives relating to what students have to know for formal assessment items.	1	2	3	4	5
3	In my interactions with students in this subject, I try to develop a conversation with them about the topics we are studying (electronically or in any other ways).	1	2	3	4	5
4	I feel it is important to provide a lot of facts to students so that they know what they have to learn for this subject.	1	2	3	4	5
5	I feel that the assessment in this course should be an opportunity for students to reveal their changed conceptual understanding of the subject.	1	2	3	4	5
6	I set aside some teaching time so that the students can discuss, among themselves, the difficulties that they encounter studying this subject.	1	2	3	4	5

7	In this course I concentrate on covering the information that might be available from a good textbook.	1 2 3 4 5
8	I encourage students to restructure their existing knowledge in terms of the new way of thinking about the subject that they will develop.	1 2 3 4 5
9	In this course, I use difficult or undefined examples to provoke debate.	1 2 3 4 5
10	I structure this course to help students to pass the formal assessment items.	1 2 3 4 5
11	I think an important reason for running teaching sessions (*or interactive sessions*) in this course is to give students a good set of notes.	1 2 3 4 5
12	In this course, I only provide the students with the information they will need to pass the formal assessments.	1 2 3 4 5
13	I feel that I should know the answers to any questions that students may put to me during this course.	1 2 3 4 5
14	I make available opportunities for students in this course to discuss their changing understanding of the subject.	1 2 3 4 5
15	I feel that it is better for students in this course to generate their own notes rather than always copy mine.	1 2 3 4 5
16	I feel a lot of teaching time in this course should be used to question students' ideas.	1 2 3 4 5

Thank you

APPENDIX B

TEACHING CONTEXT QUESTIONNAIRE

1. Please describe the assessment modes you use for this course.

(Example)

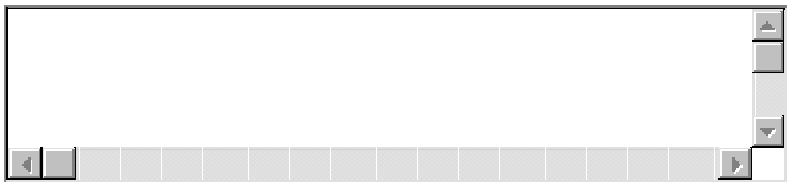
multiple choice quiz 30%

lesson submission 30%

final paper 20%

participation/attendance 20%

You can paste and copy the assessment part in your course syllabus and add any comments about your assessment mode.



2. Please select all the communication modes you use for this course.

Asynchronous/time delayed electronic communication

web site ☐

e-mail ☐

voice-mail ☐

bulletin boards ☐

discussion lists ☐

other: ☐

Synchronous/real time electronic communication

online chat ☐

audio conferencing ☐

video conferencing ☐

other: ☐

Other ways of communication

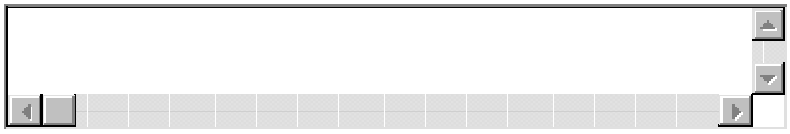
correspondence ☐

fax ☐

telephone ☐

other: ☐

3. Please describe about the ways or amount of communications or interactions between you and your students in this course, compared to your other face-to-face classrooms. In addition, do you have any other comments on your course or about this survey?



APPENDIX C

APPROACHES TO STUDYING QUESTIONNAIRE

This part of the questionnaire is about your approaches to studying. Please indicate whether you agree or disagree with each of the 32 statements below. This inventory is designed to explore the way that you go about learning in the specific context and subject in which you are now enrolled. This may mean that your responses to these items may be different to the responses you might make about your studying in other contexts or subjects. Please answer each item. Do not spend a long time on each: your first reaction is probably the best one. Do not worry about projecting a good image. Your answers are completely anonymous.

Background Information

- University or College: _____
- Course Prefix and Title (required) _____

  (e.g., EIT770: Introduction to Instructional Technology)
- Age: _____
- Sex: Male __ Female __

For each item please circle one of the numbers (1-5). The numbers stand for the following responses:

5 means that you definitely agree

4 means that you agree, but with reservations

3 should only to be used if the statement doesn't apply to you or if you really find it impossible to give a definite answer

2 means that you disagree, but with reservations

1 means that you definitely disagree

<u>You may find that some of the statements are not appropriate for you for one reason or another, in which case you should choose 3 ('Not sure') rather than leave a blank</u>

	During this courses:	Definitely agree				Definitely disagree
1	I tried to relate ideas in one subject to those in others, wherever possible.	5	4	3	2	1
2	I usually set out to understand thoroughly the meaning of what I am asked to study.	5	4	3	2	1
3	Ideas in course materials often set me off on long chains of thought of my own, only tenuously related to what I was reading.	5	4	3	2	1
4	I liked to be told precisely what to do in essays or other assignments.	5	4	3	2	1
5	I often found myself questioning things that I see or hear in course units or course materials.	5	4	3	2	1
6	The continual pressure of work – assignments, deadlines and competition – often made me tense and depressed.	5	4	3	2	1
7	I found it difficult to ‘switch tracks’ when working on a problem: I preferred to follow each line of thought as far as it will go.	5	4	3	2	1
8	The instructor seemed to delight in making the simple truth	5	4	3	2	1

	unnecessarily complicated.					
9	I usually didn't have time to think about the implication of what I have studied.	5	4	3	2	1
10	In trying to understand a puzzling idea, I let my imagination wander freely to begin with, even if I don't seem to be much nearer a solution.	5	4	3	2	1
11	I generally put a lot of effort into trying to understand things which initially seem difficult.	5	4	3	2	1
12	I preferred the course to be clearly structured and highly organized.	5	4	3	2	1
13	A poor first answer in an exam made me panic.	5	4	3	2	1
14	In trying to understand new ideas, I often tried to relate them to real life situations to which they might apply.	5	4	3	2	1
15	When I was studying, I tried to memorize important facts which might come in useful later.	5	4	3	2	1
16	I liked to play around with ideas of my own even if they didn't get me very far.	5	4	3	2	1
17	I was usually cautious in drawing conclusion unless they were well supported by evidence.	5	4	3	2	1
18	When I was tackling a new topic, I often asked myself questions about it which the new information should answer.	5	4	3	2	1
19	Often I found I had to read things without having a chance to	5	4	3	2	1

	really understand them.					
20	In reporting practical work, I liked to try to work out several alternative ways of interpreting the findings.	5	4	3	2	1
21	I found I had to concentrate on memorizing a good deal of what we have to learn.	5	4	3	2	1
22	Often when I was studying course materials, the ideas produced vivid images which sometimes took on a life of their own.	5	4	3	2	1
23	The best way for me to understand what technical terms mean was to remember the textbook definitions.	5	4	3	2	1
24	I needed to read around a subject pretty widely before I was ready to put my ideas down on paper.	5	4	3	2	1
25	Although I generally remembered facts and details, I found it difficult to fit them together into an overall picture.	5	4	3	2	1
26	I tended to study very little beyond what's required for completing assignments.	5	4	3	2	1
27	Having to speak in my interactions with instructor was quite an ordeal for me.	5	4	3	2	1
28	Puzzles or problems fascinate me, particularly when I have to work through the material to reach a logical conclusion.	5	4	3	2	1
29	I found it helpful to 'map out' a new topic for myself by seeing how the ideas fit together.	5	4	3	2	1

30	I found I tended to remember things best if I concentrated on the order in which the instructor presented them.	5	4	3	2	1
31	When I was reading an article or research report, I generally examined the evidence carefully to decide whether the conclusion was justified.	5	4	3	2	1
32	Instructor seemed to want me to be more adventurous in making use of my own ideas.	5	4	3	2	1

Thank you.

APPENDIX D

COURSE EXPERIENCE QUESTIONNAIRE

This part of the questionnaire is about your personal experience of participating in this course. When making your responses, please think about your experience of the course as a whole rather than about individual units, topics or instructors. In thinking about your relationship with your instructor, think about all kinds of contacts (face to face, phone calls, electronic mail, computer conferencing). Your responses will be kept strictly confidential.

Please indicate whether you agree or disagree with each of the statements listed below. Once again, please answer each item in a manner that best reflects your personal view:

5 means that you definitely agree

4 means that you agree, but with reservations

3 should only to be used if the statement doesn't apply to you or if you really find it impossible to give a definite answer

2 means that you disagree, but with reservations

1 means that you definitely disagree

<u>You may find that some of the statements are not appropriate for you for one reason or another, in which case you should choose 3 ('Not sure') rather than leave a blank.</u>

During taking this course:	Definitely agree				Definitely disagree
1. In this course, it is always easy to know the standard of work that is expected of you.	5	4	3	2	1

2. There are few opportunities in this course to choose the particular topics you want to study.	5	4	3	2	1
3. Instructors in this course motivate the students to do their best work.	5	4	3	2	1
4. The workload in this course is too heavy.	5	4	3	2	1
5. You usually have a clear idea of where you are going and what is expected of you in this course.	5	4	3	2	1
6. Instructors in this course give a lot of time to commenting on students' work.	5	4	3	2	1
7. To do well in this course, all you really need is a good memory.	5	4	3	2	1
8. This course encouraged me to develop my own academic interests as far as possible.	5	4	3	2	1
9. Students have a great deal of choice over how they go about learning in this course.	5	4	3	2	1
10. Assessment in this course seems to be more to do with testing what you've memorized than with testing what you've understood.	5	4	3	2	1
11. It's often hard to discover what's expected of you in this course.	5	4	3	2	1
12. Students are generally given enough time to understand the things that they have to learn in this course.	5	4	3	2	1
13. Tutors make a real effort to understand the difficulties students may be having with their work.	5	4	3	2	1

14. The students here are given a lot of choice in the work they have to do.	5	4	3	2	1
15. Instructors in this course normally give helpful feedback on how well you are doing.	5	4	3	2	1
16. The course materials for this course are extremely good at explaining things.	5	4	3	2	1
17. The course materials for this course really try to make topics interesting to students.	5	4	3	2	1
18. Too many assignments in this course ask questions that are just about facts.	5	4	3	2	1
19. There is a lot of pressure on you as a student taking this course.	5	4	3	2	1
20. I have often discussed with my instructor how I was going to learn in this course.	5	4	3	2	1
21. There is very little choice in this course on how you are assessed.	5	4	3	2	1
22. Instructors in this course make clear right from the start what they expect from students.	5	4	3	2	1
23. The sheer volume of work to be got through in this course means that you can't comprehend it all thoroughly.	5	4	3	2	1

Thank you

APPENDIX E

SURVEY INVITATION LETTER

Dear , Instructor of [course prefix and title]:

I am a doctoral student in the Department of Instructional Technology at the University of Georgia. I am conducting a study to examine how instructors perceive their teaching approaches in electronic distance learning environments. I am also studying how students perceive their studying approaches in electronic distance learning environments. I am trying to determine the interrelationships between these two perceptions.

I am asking you and your students to please volunteer a few minutes of your time to fill out the online survey questionnaire that can be found at http://itstudio.coe.uga.edu/dkim. If you would complete the questionnaire dealing with your teaching approaches and help your students to fill out the student questionnaire dealing with their studying approaches in your course, I would be most grateful.

All responses will remain confidential. The results will not be released in any individually identifiable form.

Please take the time to visit the online survey site and fill out the questionnaire for instructors. For your students' participation, you can 1) provide your students' email addresses in a designated box at the end of the questionnaire so that I can contact them to request their participation, or 2) distribute this letter to your students with your endorsement and encouragement, if you don't want to provide me with the email list due to any concern for privacy.

As a token of my appreciation for your help, each instructor participant in the study will be entered into a drawing to win $200. Each student participant in the study will also be entered into a drawing to win $100. ONE instructor and THREE students will be chosen on December 15, 2001.

This study is being supervised by Dr. Robert Maribe Branch. Feel free to contact either one of us with any questions. Thank you for your considerations.

The online survey and more details about this study are located at http://itstudio.coe.uga.edu/dkim.

Sincerely,

Dohun Kim — dohunkim@arches.uga.edu — Doctoral Student
Robert Maribe Branch, Ed.D. — rbranch@coe.uga.edu — Major Professor
Department of Instructional Technology
The University of Georgia

APPENDIX F

MAIN PAGE OF THE ONLINE RESEARCH SITE

Welcome!

This research site is intended for teachers and students currently engaged in a distance education course. The purpose of this study is to identify how instructors perceive their approaches to teaching and how students perceive their approaches to studying in a distance learning environment, and to examine the interrelationships between these perceptions. This survey should take 15-20 minutes to complete.

Consent Form for Participation in Research

By agreeing to participate, you affirm that:

- Your participation is completely voluntary.
- You may withdraw from the study at any time without the risk of any penalty.
- You understand the reason for the study is to examine the relations between teachers' approaches to teaching and students' approaches to learning in distance education.
- The results of your participation will remain confidential.

By clicking on one of the "I Agree to Participate" buttons below, you are giving your consent for the researcher to include your data.

If you are an INSTRUCTOR,

Please click below to go to a questionnaire about your approaches to teaching.

I Agree to Participate (Instructor Survey)

If you are a STUDENT,

Please click below to go to a questionnaire about your approaches to learning.

I Agree to Participate (Student Survey)

Be a Winner !!!

As a token of my appreciation for your participation,

Each instructor participant will be entered into a drawing to win $200.00 and **each student participant will be entered into a drawing to win $100.00**. **ONE instructor** and **THREE student participants** will be chosen on **December 15, 2001**.

The winners will be notified via email and also announced on this survey site. **After you submit your questionnaire, please provide your email address in a box at my appreciation page**. Your email address will be used only for the drawing and will be stored separately from your questionnaire responses to ensure your confidentiality. The drawing will be administered independently by a third party.

Please visit this website again to see if you are the winner on December 15, 2001. I will also upload this site to inform you how the result of this study comes out. Please visit this site again! Thank you very much!

Thank you in advance for your participation. If you have any questions, please feel free to contact Dohun Kim via e-mail: dohunkim@arches.uga.edu. You can also contact Dr. Robert Maribe Branch, advisor of this research, at rbranch@coe.uga.edu

---

Research at the University of Georgia which involves human participants is overseen by the Institutional Review Board. Questions or problems regarding your rights as a participant should be addressed to Chris Joseph; Institutional Review Board; Office of V.P. for Research; The University of Georgia; 606A Graduate Studies Research Center; Athens, Georgia 30602-7411; Telephone (706) 542-6514.