A STUDY OF COGNITIVE ENGAGEMENT IN ONLINE LEARNING

DISSERTATION

By

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Abstract

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This study investigates the degree to which students cognitively engage with their online courses in a Computer Mediated Communication (CMC) environment and is a replication of the Richardson and Newby (2006) study. Within a technology context, a Community of Inquiry is the framework for the study, and the general model of student learning is the theory tested using Biggs's (1987) Study Process Questionnaire (SPQ). *Cognitive engagement* is defined as the integration and utilization of students' motivations and strategies in the course of their learning (Guthrie, 1996). The majority of online courses are offered at the freshman and sophomore levels; therefore, this population is investigated. Since there is only one contemporary online study of cognitive engagement to date, this is an important avenue of future research.

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CHAPTER ONE

INTRODUCTION

This chapter provides an overview of online learning and technology, specifically Computer Mediated Communication (CMC). Within the context of CMC, a Community of Inquiry -- composed of cognitive presence, social presence and teaching presence -- provides a conceptual framework for this study. Cognitive presence, or higher-order learning within an asynchronous learning environment, is conceptualized through connectivity and asynchronicity as the core properties of online learning. The constructs for this study of cognitive engagement are delineated in terms of strategies and motivations. A statement of the problem demonstrates the significance of this study, the research questions are listed, and the chapter is summarized.

Overview

In the past decade, online learning has become mainstream in academia due to the dissemination of contemporary research and the proliferation of course offerings from the traditional academy and for-profit institutions. Within virtual environments, communities of inquiry are linked through dichotomous communication modes: synchronous and asynchronous. Asynchronous online learning is more than a means to access information; rather, the collaborative and reflective properties of asynchronous online learning offer the potential to create an environment with both social and cognitive presence. As learning outcomes are developed, an increased emphasis on the quality of the educational process, or cognitive engagement, will result because learning is more than accessing information and participating in synchronous communication (e.g., chat rooms).

Asynchronous communication makes possible critical discourse and reflective space. It is through technology, or Computer Mediated Communication, that a unique method of reflective, intellectual, and collaborative learning has developed.

Computer Mediated Communication

The Internet created a new way to communicate regardless of time and distance. Since the development of the Internet, the number of computer users has substantially increased to 68% of the population in the United States (Internet Usage Statistics, 2006). In the past decade, the cost of computer hardware has decreased, while the technology has increased for the individual user.

Internet access has greatly improved due to Digital Subscriber Lines (DSL), wireless, and satellite technologies. DSL is available in large cities and many rural areas, while wireless and satellite technologies provide Internet service outside the DSL range (Jessup & Valacich, 2006). Laptops, Blackberries, and cell phones have built-in wireless cards to access the Internet. Campuses have become "wired," and "hot spots" or access points are available at cafés and malls. Since Internet access is ubiquitous, it connects students for learning and continues to change as technologies emerge.

The Internet has spawned the expansion of innovative learning technologies, particularly software. Two companies that have led the market in the development of software for academia, BlackBoard and WebCT, recently merged (see http://www.blackboard.com/webct). Academic institutions have chosen either BlackBoard (Bb) or WebCT and purchased licenses to support one platform. Institutional webmasters provide faculty and student support for the chosen platform. Within WebCT or BlackBoard, the software content is primarily asynchronous, including a calendar,

syllabus, course materials, discussion modules, whiteboards, email, and video. Online chat is synchronous and used for communicating in real time. Educational online communication systems have become ubiquitous at academic institutions.

As a communication tool, the computer generally provides a written record of communication between the computer and the student, the instructor and the student, and the student and peers. Warschauer (1997) suggests that Computer Mediated Communication (CMC) is text-based, providing a record of interaction and reflection. Online communication is considered an intellectual amplifier since it is a form of communication that is easily transmitted, stored, archived, edited, and rewritten (Harasim, 1990). Within CMC, a Community of Inquiry is developed to support a rich, unique, asynchronous educational experience.

A Community of Inquiry

A Community of Inquiry, as the framework for this study, assumes that learning occurs within the Community through the interaction of three core elements: cognitive presence, social presence, and teaching presence (see Figure 1). The educational experience is a result of the synergies between the primary participants (i.e., students and teachers) and cognitive, social, and teaching presences. Thus, supporting discourse, setting climate, and selecting content bind the educational experience as elements of social, teaching, and cognitive presences.

Social presence. It has been widely accepted that social context greatly affects the nature of learning and outcomes (Resnick, 1991). Social presence is defined as "the ability of participants in the Community of Inquiry to project their personal characteristics into the community...as real people" (Garrison, Anderson, & Archer,

2000, p. 89). The primary importance of this element is that it supports cognitive presence, indirectly facilitating the process of critical thinking for the learning community.

Cognitive presence. Of the three elements in the Community of Inquiry, the most basic to success is cognitive presence, defined as the "extent to which the participants in any particular configuration of a Community of Inquiry are able to construct meaning through sustained communication" (Garrison, Anderson, & Archer, 1999, p. 89). Cognitive presence is vital to critical thinking and inquiry, which are concepts guided by the ideas of Dewey (1933). Dewey's practical form of inquiry included three situations based upon experience: pre-reflection, reflection, and post-reflection. A goal of assessment or learning outcome promulgated frequently in higher education is critical thinking. Cognitive presence is not part of the assessment vernacular; however, critical thinking is frequently utilized in outcomes and assessment posters. Garrison and colleagues (1999) suggest high levels of social presence with accompanying high degrees of commitment and participation are required for the development of higher-order thinking skills and collaborative work. Cognitive presence by itself is not sufficient to sustain a critical community of learners; social and teaching presence are critical elements.

Teaching presence. The binding element in creating a Community of Inquiry for educational purposes is teaching presence. The concept of teaching presence is constitutively defined through three categories: design and organization, facilitating discourse, and direct instruction (Anderson, Rourke, Garrison, & Archer, 2001). The

establishment of a Community of Inquiry is dependent upon the presence of a teacher to create and sustain the learning, especially in an asynchronous environment.

Discussing a Community of Inquiry and, more specifically, the elements of social, cognitive, and teaching presence provides a foundation for the discussion of cognitive engagement.

Cognitive Development and Engagement

Cognitive development is a more general term, while cognitive engagement is a more specific term within cognitive development. Cognitive development is defined as

> the construction of thought processes, including remembering, problem solving, and decision-making, from childhood through adolescence to adulthood…. Cognitive development refers to how a person perceives, thinks, and gains understanding of his or her world through the interaction of genetic and learned factors. Among the areas of cognitive development are information processing, intelligence, reasoning, language development, and memory. (Wells, n.d.)

In contrast, cognitive engagement is defined as "the integration and utilization of students' motivations and strategies in the course of their learning" (Guthrie, Van Meter, McCann, & Wigfield, 1996, p. 306). Although cognitive engagement has been studied in fields varying from literacy (Guthrie, 1996) to multimedia (Bangert-Drowns & Pyke, 2001; Stoney & Oliver, 1999), there is a paucity of research in the technology context. In 1983, Corno and Mandinach initiated research that examined classroom learning from the perspectives of learning, motivation, and instruction and termed it *cognitive engagement*. They elucidated self-regulated learning as the highest form of cognitive engagement in

which learners carry out specific cognitive academic activities (e.g., deliberate planning and monitoring). An elementary definition of cognitive engagement refers to how

Table 1

Motive and Strategy in Approaches to Learning and Studying

Approach	Motive	Strategy
Surface Approach (SA)	Surface Motive (SM) is to meet requirements minimally; a balancing act between failing and working more than is necessary.	Surface Strategy (SS) is to limit target to bare essentials and reproduce them through rote learning.
Deep Approach (DA)	Deep Motive (DM) is intrinsic interest in what is being learned; to develop competence in particular academic subjects.	Deep Strategy (DS) is to discover meaning by reading widely, inter-relating with previous relevant knowledge, etc.
Achieving Approach (AA)	Achieving Motive (AM) is to enhance ego and self-esteem through competition; to obtain highest grades, whether or not material is interesting.	Achieving Strategy (AS) is to organize one's time and working space; to follow up on all suggested readings, schedule time, behave as 'model student.'

Note. From "Student Approaches to Learning and Studying: Study Process Questionnaire Manual," by J. B. Biggs, 1987, p. 3. Burwood, Victoria: Australian Council for Educational Research. Copyright 1987 by J. B. Biggs. Reprinted with permission of the author.

students "go about learning" while taking into account the unique individual experiences that shape their learning (Biggs, 1987). The term cognitive engagement is defined narrowly in this section and will be expanded to encompass a broader description of learning approaches, motivations, and strategies. In Table 1, motivations and strategies are both classified as Surface, Deep, or Achieving and form the six constructs used to measure cognitive engagement. Defining the motives and strategies is essential before presenting the problem statement, research questions, and hypotheses.

Problem Statement

This study makes a significant contribution to the literature by testing a model of cognitive engagement and replicating a study using freshman and sophomore students -- an online population that until now has not been studied. Although a previous study of cognitive engagement (Richardson & Newby, 2006) offered a technology context, an instrument, and results, it did not offer a model or framework.

Therefore, it is important to test cognitive engagement on students who represent the majority of learners at a community college. At traditional academic institutions, online courses are offered at the undergraduate level, but not at the graduate level, forcing graduate students to either attend classes on campus or online through a non-traditional institution. Therefore, research on online graduate level courses represents a small fraction of the online student population. On the other hand, researching cognitive engagement and attributes of undergraduate students represents the typical online

situation. Although research on cognitive engagement dates back several decades, the online environment or context is a contemporary area of research.

Both the research questions and hypotheses are presented here to provide a frame of reference for the remaining chapters of this dissertation. Two research questions are addressed in this study:

1. What strategies and motivations (Deep, Surface, or Achieving) are students utilizing in their online courses?
2. Do gender, prior online experience, subject matter, age, and employment status affect cognitive engagement?

The following hypotheses were tested using survey data collected from online students:

1. There are no significant differences among students' learning strategies and motivations due to gender.
2. There are no significant differences among students' learning strategies and motivations due to previous experience with online courses.
3. There are no significant differences among students' learning strategies and motivations due to the subject matter of online courses.
4. There are no significant differences among students' learning strategies and motivations due to age.
5. There are no significant differences among students' learning strategies and motivations due to employment status.

The research questions and hypotheses are reiterated in the literature review, methodology, and results chapters to provide direction for this study.

Summary

This chapter introduced the study's context (i.e., Computer Mediated Communication), framework (i.e., a Community of Inquiry), and subject (i.e., cognitive development and engagement). Six motives and strategies serve as constructs for a study of cognitive engagement in an asynchronous virtual environment. The research questions and hypotheses were presented to impart clarity, while the rational and importance of this study was explained in the problem statement. The next chapter reviews salient online literature and, most importantly, the theoretical basis of this study.

CHAPTER TWO

LITERATURE REVIEW

This chapter begins by briefly describing the past and current literature applicable to cognitive engagement. The technology context is explained in terms of Computer Mediated Communication (CMC) for online learning. Within this context, a Community of Inquiry is presented with cognitive presence accentuated because it leads to cognitive development and engagement. Cognitive engagement theories and a general model of student learning are nested within the framework of a Community of Inquiry. The general model of student learning conveys the presage (i.e., personal and situational) factors affecting learning processes (i.e., motives and strategies), and ultimately the product performance or outcomes relative to the student. The general model of student learning was adapted for this study to formulate the five hypotheses (see Figure 2).The final section provides a summary of salient points.

Past Research on Online Learning Environments

In reviewing previous research, comparisons of three learning environments (face-to-face, online, and a hybrid of both) have been conducted (Brannan, 2005; Newman, Webb, & Cochrane, 1997; Wong, 2005). Newman and colleagues (1997) found significant differences in critical thinking between computer-conferencing students and face-to-face students. Specifically, computer-conferencing students frequently contributed material and ideas from outside the course. Consistent with this finding, computer-conferencing students were found to be less interactive; however, they exhibited higher levels of critical thinking.

A substantial body of literature has investigated a Community of Inquiry, which is composed of cognitive presence, social presence and teaching presence (Garrison, 2003; Garrison et al., 1999; Garrison & Cleveland-Innes, 2005; Picciano, 2002; Richardson & Swan, 2003). An earlier study (Brown, Meyers, & Roy, 2003) identified learning strategies which are integral components of cognitive engagement. In 2006, research Richardson and Newby quantified online cognitive engagement using the Study Process Questionnaire. This study replicates the Richardson and Newby study with a population that represents the majority of online learners: freshman and sophomores.

Computer Mediated Communication

In the previous chapter, CMC was described in general terms as the technology context. In this section, CMC is defined, and the qualities of this communicated medium are illustrated. Software and hardware combinations have contributed to a new type of communication termed Computer Mediated Communication (CMC). Ferris (1997) defined CMC as:

> both task-related and interpersonal communication conducted by computer. This includes communication both to and through a personal or a mainframe computer, and is generally understood to include asynchronous communication via email or through use of an electronic bulletin board; synchronous communication such as "chatting" or through the use of group software; and information manipulation, retrieval and storage through computers and electronic databases. (p. 1)

December (1997) defines CMC as "a process of human communication via computers, involving people, situated in particular contexts, engaging in processes to shape media for a variety of purposes" (p. 1). Technology started a communication

medium that created new opportunities for students to learn and new opportunities for academic institutions to offer courses and degrees online. It changed the course of education from distance education to online education through CMC.

Warschauer (1997) lists three aspects of CMC that account for greater quality of participation, including:

1. CMC reduces social context clues related to race, gender, accent, and status that may reinforce unequal participation in other types of interactions.
2. CMC reduces non-verbal cues, such as frowning and hesitating, which can intimidate those with less power or status by reminding them that their comments are evaluated.
3. CMC allows individuals to contribute at their own time and pace, neutralizing the advantage of those who tend to speak out the loudest, frequently without permission.

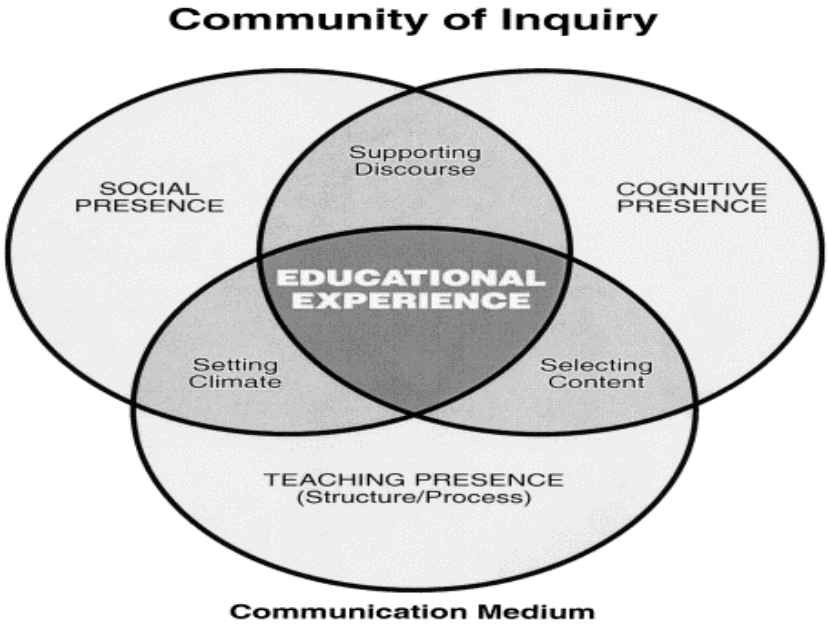
An advantage of using computers in education is that they help make thinking or cognitive engagement visible. New software instructional programs prompt learners to articulate the steps taken during their thinking processes; the software then records a file of thought that learners use to reflect on their work and teachers use to assess learners' cognitive engagement and progress (National Research Council, 2000). Technology is a communication medium that has changed the way students learn, think, and communicate in an online environment. In this dissertation, the context is Computer Mediated Communication, and the framework is a Community of Inquiry.

A Community of Inquiry

A substantial challenge facing educators using CMC is the creation of a critical Community of Inquiry within a virtual text-based environment (Garrison, Anderson, & Archer, 2001). A Community of Inquiry is the integration of cognitive presence, social presence, and teaching presence (see Figure 1) in a collaborative, interactive space where learners and educators are co-creators of knowledge. Through interaction, the collective intelligence is greater than the sum of the individual learners (Redmond & Lock, 2006).

Figure 1

Elements of an Educational Experience



From "Critical Inquiry in a Text-Based Environment: Computer Conferencing in Higher Education," by D. R. Garrison, T. Anderson, and W. Archer, 1999, *The Internet and Higher Education*, *2*(2-3), p. 88. Copyright 2000 by Elsevier Science Inc. Reprinted with permission of the authors.

The three presences are not didactic; instead, they are a harmonious continuum within an educational experience supported by social discourse and applicable subject content (Garrison et al., 1999). A Community of Inquiry starts with the subject and participants under study; the subject is math or business, and the participants are online students. Lipman (1991) notes the importance of the Community of Inquiry to facilitating critical thinking and Deep learning as outcomes. He suggests a Community of Inquiry includes the attributes of questioning, reasoning, connecting, challenging, and developing problem-solving techniques; many are characteristics of cognitive presence.

Cognitive Presence

In the previous chapter, cognitive presence was introduced and defined within a Community of Inquiry. This section presents a more in-depth discourse of the specific properties of cognitive presence. In a virtual environment, asynchronous online learning can create a rich cognitive presence capable of supporting effective higher-order learning that is congruent with deep and meaningful learning outcomes. Connectivity (i.e., collaborative features) and asynchronicity (i.e., reflective features) are identified as the core attributes of online learning since they have the potential to create a specialized effective higher-order learning environment. The collaborative and reflective properties of asynchronous online learning create the opportunity for both social and cognitive presence within a Community of Inquiry.

Comprehending learning effectiveness in this communication medium requires an appreciation of the synergies between asynchronous and connectivity properties. The convergence of reflection and collaboration constitute the private and public worlds of the learner. Garrison (2003) suggests this is a move from the transmission and

assimilation of vast amounts of information to the interactive and constructive potential of asynchronous online learning supported by virtual communities of inquiry.

Since cognitive presence is grounded within the critical thinking literature, a model of reflection is described. Garrison and colleagues (1999) constructed a parsimonious practical inquiry model that defines four phases essential to understanding cognitive presence: a triggering event, exploration, integration, and resolution. These phases are couched within the private and shared worlds, reflection and discourse of the learner. Finally, reflective inquiry represents both the constructive (internal) and collaborative (external) aspects of cognition indicative of higher-order knowledge acquisition, application, and critical thinking (Garrison et al., 2001).

In this section, a graphic illustration of the elements of an educational experience presented a Community of Inquiry. Cognitive presence and the properties of connectivity and asynchronicity were identified for higher-order learning. An understanding of cognitive presence contributes to cognitive development and cognitive engagement

Cognitive Engagement, Student Engagement, and Cognitive Development

In the previous chapter, cognitive development and cognitive engagement were defined. In this section, literature is reviewed on cognitive engagement, student engagement, and cognitive development theories as a segue to the general model of student learning.

The term student engagement is grounded in student development literature, often within cognitive-structural theory. An example of engagement indicators are the "Seven Principles for Good Practice in Undergraduate Education" by Chickering and Gamson

(1987). These principles include student-faculty contact, cooperation among students, active learning, prompt feedback, time on task, high expectations, and respect for diverse talents and ways of learning.

The National Survey of Student Engagement (NSSE) is specifically designed to assess the extent to which students are engaged in empirically derived good educational practices and to identify what students gain from their college experience (Kuh, 2001). The main content of the NSSE, *The College Student Report*, measures student behaviors that are highly correlated with many desirable learning and personal development outcomes of college. In some literature, the phrases *student engagement* and *cognitive engagement* are used interchangeably. However, in other literature, student engagement is broader than cognitive engagement, which is defined more narrowly in the following three examples.

Stoney and Oliver (1999) suggest the use of interactive multimedia can foster and develop cognitive engagement through its ability to attract and hold students' attention and focus. They differentiated between higher-order thinking and lower-order thinking. Lower-order thinking requires low cognitive engagement on operational tasks.
An important facet of developing higher-order thinking skills is the ability to reflect on learning experiences and incorporate new knowledge with pre-existing knowledge. Higher-order thinking activities include strategizing, predicting, and imposing multiple perspectives. Thus, Stoney and Oliver (1999) differentiate higher-order and lower-order thinking in relation to cognitive engagement.

Bangert-Drowns and Pyke (2001) created a taxonomy of student engagement with software including seven different levels ranging from literate thinking to disengagement.

At the top level, literate thinking requires interpretation from multiple and personally meaningful perspectives. During critical engagement, the student investigates operational and content-related limitations of the software. At the self-regulated level, the student creates personal goals within the software to make the software as interesting as possible. The next three levels are types of engagement, and the bottom level is disengagement.

Henri (1992) created a cognitive skills framework similar to that of Benjamin Bloom's (1956) Taxonomy of Education Objectives. Bloom's taxonomy for the cognitive domain conveys progressively higher levels of cognitive activity, from information at the knowledge level to judgment and rating of information at the evaluation level (Hara, Bonk & Angeli, 2000). Henri's model also identified the level of information processing (i.e. Surface versus in-depth) as adopted from Entwistle and Waterston (1988). Henri suggested that Surface level processing includes making judgments without justification and repeating information. In contrast, in-depth processing includes linking facts and ideas, discussing pros and cons of a situation, and making judgments supported by information. In-depth statements are more integrated and substantial, while Surface level statements are fragmented and narrow.

Cognitive development is an expansive term that includes the construction of thought processes, problem solving, and decision making from childhood to adulthood. Piaget (1952) and Perry (1970, 1981) are significant contributors to the cognitive development literature.

Piaget (1952) argued that the young mind can be described in terms of complex cognitive structures. Cognitive growth results from the constant interweaving of assimilation and accommodation. Assimilation occurs when new information is modified

or changed to fit into schemas or existing knowledge. This retains the new information or experience while adding to what already exists in the mind. Accommodation is restructuring or modifying knowledge to adapt to the addition of more information. Cognitive development entails a constant effort to adapt to the environment through assimilation and accommodation. Cognitive structures are patterns of physical or mental action that underlie specific acts of intelligence and correspond to stages of child development (National Research Council, 2000).

Perry (1970, 1981) developed a model that holds much explanatory power in suggesting how students make sense out of the information, theories, experiences, and opinions that confront them in college classrooms. Perry's descriptions of three types of students (dualistic, multiplistic, and relativistic) summarize many of the differences in student thinking.

Dualistic students are those who see the world as a place of absolutes such as right or wrong, true or false, or as a dichotomy. Dualistic students tend to think of their role in terms of learning "right" answers and the role of the professor as providing those answers. They present judgments and evaluations as if they were self-evident, without the need for substantiation. This position is typical of freshman and sophomore students..

Multiplistic students recognize that there are multiple perspectives to a problem. Perry (1970, 1981) characterized multiplicity as honoring diverse views when the right answers are not yet known. This position is typical among students who are between their freshman and senior years.

Relativistic students see knowledge as relative to particular frames of reference. Not al opinions continue to appear equally valid. Knowledge is viewed contextually based upon evidence and supporting arguments. Authorities are seen as people who can and should be questioned, which is typical of senior students (Evans, Forney, & Guido-DiBrito, 1998).

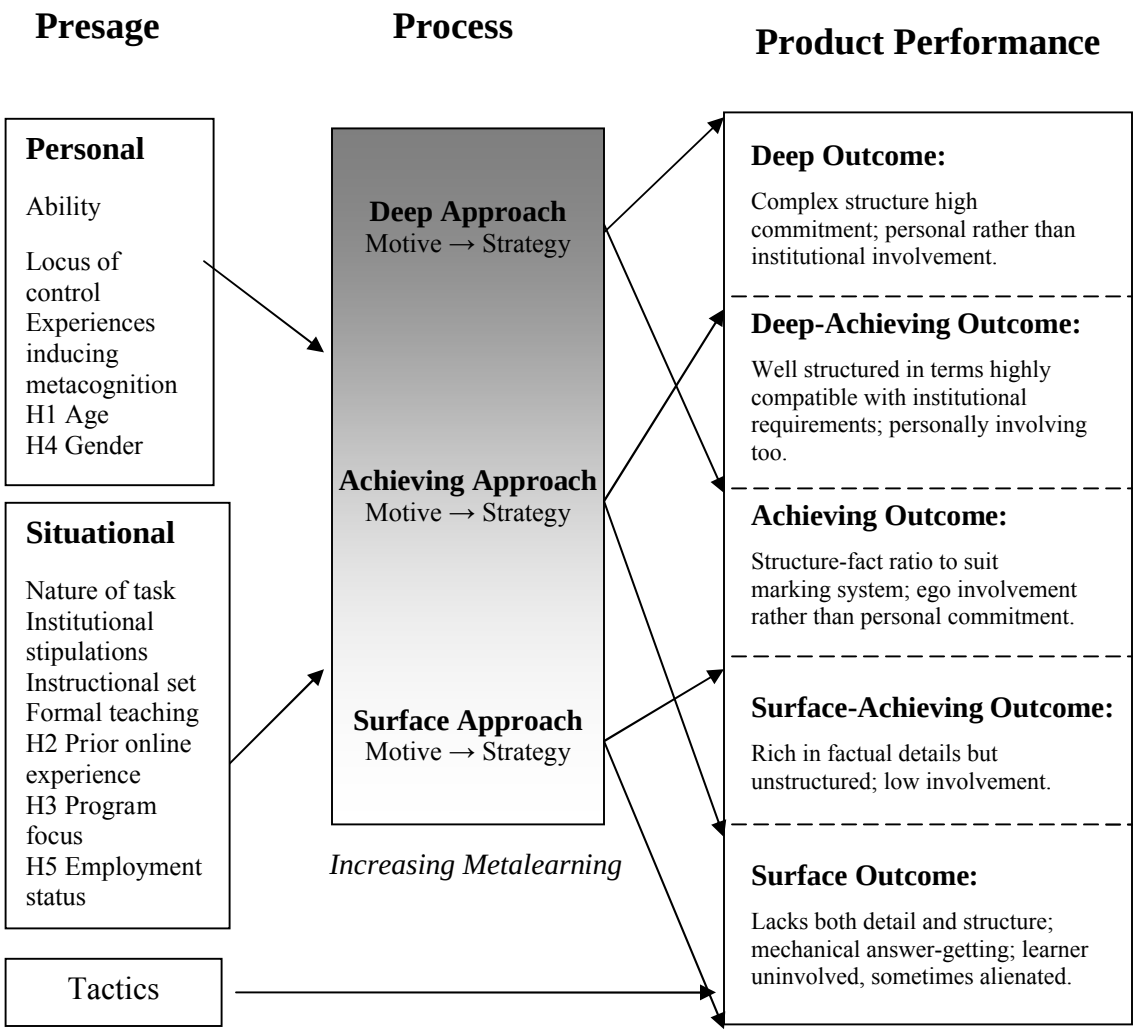
Piaget (1952) posited cognitive structures and Perry (1970, 1981) suggested positions of cognitive development. This section covered cognitive engagement, student engagement, and the cognitive theories of Piaget and Perry. Next, a model is introduced that illustrates how cognitive engagement is measured through the constructs of motives and strategies.

General Model of Student Learning

The model visualized explains the inputs, process and output of metalearning. The general model of student learning conveys the relationship between presage factors, the process or approaches to learning, and the outcomes or product performance (see Figure 2). This section is organized into the three major sections of the model with the accompanying subsections. In recalling the earlier chapter, Table 1 Motive and Strategy in approaches to learning and studying, three motives and three strategies were defined, which when combined are the approaches listed in the Process or middle of the general learning model.

Figure 2

General Model of Student Learning



From "Student Approaches to Learning and Studying: Study Process Questionnaire Manual," by J. B. Biggs, 1987, p. 6. Burwood, Victoria: Australian Council for Educational Research. Copyright 1987 by J. B. Biggs. Adapted with permission of the author.

Presage Factors

Personal factors. The inputs or presage factors are comprised of personal and situational factors (see Figure 2). The presage -- or personal -- factors affecting learning processes and outcomes include ability, locus of control, and experiences inducing metacognition per the model. Furthermore, Biggs (1987) states that personal factors include age, experience, and level of parental education. In considering the motives and strategies (i.e., process), a student's use of Deep and Achieving approaches is positively related to his or her parents' education: the less parental education, the higher likelihood that the student will use a Surface approach (Biggs, 1987). Personal factors affect Deep learning, while situational factors relate to Surface approaches. Achievement falls between the two and close to the Deep approach (see Figure 2). In this study, individual variables or attributes including age, metacognition, and gender will be examined to see how they affect the learning process.

Age. In general, Deep and Achieving approaches keep increasing until well beyond 40 years of age, while Surface learning decreases (Biggs, 1987). Reisetter and Boris (2004) suggested older students tend to be more satisfied with online learning than younger students. Kemp (2002) defined *resiliency* "to describe the individual's ability to manage or cope with significant adversity or stress in ways that not only are effective but also may result in increased ability to respond to future adversity" (p. 12). Resiliency may be related to age and is one attribute found in many successful students.

Metacognition. In addition to age, experiences inducing metacognition affect process and performance outcomes. Metacognition is the ability to monitor one's current

level of understanding and learning and to take charge of one's own learning (National Research Council, 2000). Metalearning refers to students' awareness of and control over their own learning processes. Students can be aware of two things: the content to be learned and the process of learning (Biggs, 1987). Experiences that affect metacognition ultimately influence the motives and strategies that affect learning outcomes.

Gender. Numerous studies focus on gender in the online or CMC environment. Blum (1999) suggests, "that in a CMC environment, there are higher dispositional, situational, and institutional barriers for female distance education students" (p. 1). In addition, major findings supported Belensky, Clinchy, Goldberger, and Tarule's (1986) model that male learning attributes or communication styles create an inequitable learning atmosphere in a CMC environment.

In another study, Gunn and McSporran (2003) cited literature stating women are disadvantaged because of inferior levels of access and technology literacy. They also suggest women are disadvantaged in light of dominant male behavior, which is consistent with Blum. In their study, gender differences emerged in learning. The female students spent much more time preparing for modules and studied later in the evening, fitting study around other commitments such as family. Finally, they conclude that women often perform better than men despite the observable differences in interaction style. The reasons for better performance by women and mature students include the motivation to succeed, greater ability to work independently, and the ability to multi-task.

Young and McSporran (2005) found that online courses favor women and older students because they tend to be more motivated, better at communicating online, and more diligent at scheduling their learning. In contrast, male students and younger

participants need the discipline that classroom sessions provide. Contemporary research has confirmed that age, gender, and metacognition are personal factors that influence general learning.

Situational factors. The situational factors in the model include the nature of the task, institutional stipulations, the instructional set, and formal teaching. Biggs (1987) also posits many situational factors increase perceived stress, which in turn encourages a Surface approach and inhibits a Deep approach. An example of an institutional issue influencing a situational factor is classroom size. It can be difficult to sit in a crowded classroom with a minimal view of the instructor or where it is difficult to hear. In addition, students can be trained to improve Deep and Achieving approaches. In this study, prior online experience and employment status are considered situational factors.

Prior online experience. Richardson and Newby (2006) reported significant findings for the relationship between prior online experience and Deep and Achieving strategies among graduate students from the data collected in 2003. Prior online experience may be a factor in learning online since it may affect how students navigate and interact with the content, instructor, and peers. Computer experience with software such as WebCT or BlackBoard is useful; however, these programs are "point and click" and are user friendly. Some institutions currently offer tutorials as part of online orientations to help students become comfortable with the online software program.

Employment status. A situational factor that affects many students is working (part-time or full-time) in addition to carrying a part-time or full-time academic load. The amount of time students spend working may affect academic performance since they may not have enough time to study or meet assignment deadlines. Situational pressures may

lead to a Surface learning approach, so considering employment status is an important aspect of this study.

In this section, personal and situational factors were assimilated into presage factors which contribute to differences in the process and outcomes of online learning.

Process

Process factors determine the way a student goes about learning in terms of student motives and accompanying strategies. Figure 2 depicts the process, in terms of three approaches: the Deep approach, the Achieving approach, and the Surface approach that are conceptualized as combinations of motives and strategies. The following section is organized into motive, strategy, and meta-learning.

Motive. Part of self-directed learning or metalearning is motivation, which affects the amount of time that students are willing to devote to learning. Online learning requires as much or more discipline than classroom learning since there may be less structure or daily accountability. Thus, motivation and persistence in academic activities are crucial in addition to critical thinking. The amount of cognitive effort expended is an appropriate index of motivation; it relies on the learner mastering the learning task and maintaining a high sense of personal efficacy (Schunk, 1989). The more control the students have over their course, as in online courses, the more self-regulation or metacognition is required.

The distinction between goals and motivation could be indiscernible because they are synergistic. Goals can range from intrinsic orientation to extrinsic orientation and may be divided into learning goals and performance goals. Valle et al. (2003) confirmed in their study that high learning goals are usually associated with the use of Deep learning

strategies. Greene and Miller (1996) posit that perceived ability and learning goals influence meaningful cognitive engagement, defined as self-regulation and Deep strategy use, whereas performance goals lead to shallow cognitive engagement. Schunk (1991) argued that possessing cognitive strategies that were effective in the past could enhance a learner's perceptions of ability. Self-efficacy significantly affects student performance in that when confidence levels increase, performance levels also increase (DeTure, 2004).

Strategy. A strategy is not a direct procedure; rather, a strategy is a "heuristic that supports or facilitates the learner as he or she learns to perform the higher-level operations" (Rosenhine & Meister, 1992, p. 26). Rosenhine and Meister suggest six steps to teaching higher-order cognitive strategies: (a) present the new cognitive strategies, (b) regulate difficulty during guided practice, (c) provide varying contexts for student practice, (d) provide feedback, (e) increase student responsibility, and (f) provide independent practice. Students placing a strong emphasis on developing their competence report using more active strategies and putting more effort into learning activities (Dupeyrat & Marine, 2005).

An instructional procedure is an example of a scaffold that is a form of support provided by the instructor or other students to bridge the gap between current abilities and future goals. Scaffolding is based on social constructivist models of learning, originating in the socio-cultural perspective of Vygotskyan theory. The term can be traced to Vygotsky's concept of the Zone of Proximal Development, which refers to a learner's optimal developmental potential (McLoughlin, 2002). Woods and Ebersole (2003) suggest communal scaffolding recognizes that successful online learning must

structure social support if learners are to be optimally challenged to maximize learning benefits.

Another way to conceptualize the use of scaffolding is to explain how knowledge is transferred from cognitive to practical application. In communal scaffolding, the gap is bridged between the cognitive (i.e., intellectual) task and the interpersonal or social and affective requirements of online learning (Harley, 1993). Thus, the process of online learning is a combination of motives and goals, strategies or scaffolds, and metalearning.

Metalearning. Metalearning refers to students' awareness of and control over their own learning processes. During metalearning, students adopt those strategies that are congruent with their motives. If they are curious (i.e., Deep motive), they will want to find out and understand all that they can about a topic (i.e., Deep strategy); if they want to achieve top marks (i.e., Achieving motive), they will work hard to meet the course's objectives (i.e., Achieving strategy). In Figure 2, metalearning capability is represented as increasing vertically. Thus, the Deep approach is at the top of the model, followed by the Achieving approach and the Surface approach (Biggs, 1987). Garrison (1992) suggests two dominant theoretical frameworks in adult education: critical thinking and self-directed learning. Metalearning -- or self-directed learning -- includes responsibility and control issues. Self-directed learning is about finding motivation from within oneself or from peers, family, and friends and then implementing various strategies to achieve learning, especially in an online environment.

Three important attributes of the online learning process include motivation, strategies, and metalearning (see Figure 2). In the learning process, students take

responsibility for their collaborative discussions; through reflective inquiry, they find purpose within the collegiate learning community.

Product Performance

The product performance or the general model of student learning refers to the outcomes relative to the student. Outcomes, frequently included on syllabi, are a way of measuring or assessing learning and are utilized in assessment and accreditation processes. Revisiting Table 1, Biggs (1987) suggests that Surface and Deep strategies convey ways in which students engage in the actual tasks of learning, while the Achieving strategy delineates ways in which students organize the temporal and spatial contexts in which the tasks are carried out. Therefore, it is possible for students to combine an Achieving approach with either a Surface or Deep approach. The three approaches lead to different kinds of learning outcomes.

The Surface approach leads to retention of factual detail at the expense of understanding the structural relationship inherent in the data learned; emotional or affective outcomes are feelings of dissatisfaction, boredom, or outright dislike. The Deep approach leads to an understanding of the structural complexity of a task and to positive feelings about it. The Achieving approach, particularly in combination with the Deep approach, leads to good performance in examinations, a good academic self-concept, and feelings of satisfaction.

Longitudinally, it has been found that students who predominantly use a Surface approach do not attend graduate school, while those who predominantly use Deep and/or Achieving approaches pursue advanced degrees. The composite Deep-Achieving approach is most highly associated with the attributes of formal education. Learning

approaches, especially Deep and Achieving ones, are most effective when students are consciously aware of their own learning processes and try deliberately to control them (Biggs, 1987).

In light of the literature review, the study's research questions are revisited.

1. What strategies and motivations (Deep, Surface, or Achieving) are students utilizing in their online courses?
2. Do gender, prior online experience, subject matter, age, and employment status affect cognitive engagement?

Summary

First, a concise review of pertinent literature was provided. The context was set with an overview of technology -- specifically, Computer Mediated Communication (CMC). A Community of Inquiry frames this study of cognitive and student engagement. A general model of student learning introduced presage factors, processes, and outcomes including specific factors such age, gender, employment status, and prior online experience. Finally, the research questions for the study were listed in light of the literature review.

CHAPTER THREE

METHOD

This chapter describes the study's methodology, data collection process, and survey respondents. Research limitations are reviewed to provide a guide for applying the research findings. This study replicates the Richardson and Newby (2006) study using a different population.

Overview

A quantitative methodology was chosen because statistical methods are especially useful for looking at relationships and patterns and expressing these patterns with numbers. Rudestam and Newton (2001) suggest a common strategy in the social sciences is a comparison between groups using surveys or questionnaires. Quantitative methodology involves analyzing numbers using a variety of statistical techniques.

In 2006, Richardson and Newby investigated cognitive engagement using quantitative methods. They administered a quantitative survey called the Study Process Questionnaire (SPQ) to students enrolled in graduate distance courses. The purpose of the SPQ is to measure students' motivations and strategies in an online learning environment. Biggs (1987) suggests, "the SPQ is designed to assess the extent to which a college/university student endorses different approaches to learning and the more important motives and strategies" (p. 1). This dissertation study is a replication of the Richardson and Newby (2006) study using a different population.

This study addresses the following research questions:

1. What strategies and motivations (Deep, Surface, or Achieving) are students utilizing in their online courses?

2. Do gender, prior online experience, subject matter, age, and employment status affect cognitive engagement?

To address these questions, the following hypotheses were tested using survey data collected from online enrolled students:

1. There are no significant differences among students' learning strategies and motivations due to gender.
2. There are no significant differences among students' learning strategies and motivations due to previous experience with online courses.
3. There are no significant differences among students' learning strategies and motivations due to the subject matter of online courses.
4. There are no significant differences among students' learning strategies and motivations due to age.
5. There are no significant differences among students' learning strategies and motivations due to employment status.

Data Collection

Data was collected online using a survey in the WebCT software that is used for online courses. The quantitative data included demographic information and responses to the Study Process Questionnaire (see Appendix A). Demographic data collected included past online experience, online course subject matter, gender, age group, and employment status. Consent was obtained prior to administering the survey by using an online consent form. Only students 18 years of age or older were surveyed due to IRB restrictions. Once online participants entered demographic data, the program permitted them to proceed to the Study Process Questionnaire (SPQ).

The instrument is a substantive part of the data collection process. Reliability and validity for the SPQ has been established through numerous studies. Biggs (1987) lists reliability coefficients for each motive and strategy: Surface Motive (.61), Surface Strategy (.66), Deep Motive (.65), Deep Strategy (.75), Achieving Motive (.72), and Achieving Strategy (.77). Therefore, the validity and reliability of the questionnaire is well established (Hattie & Watkins, 1981; O'Neil & Child, 1984). The combination of the SPQ and demographic data permitted testing of the hypotheses. In 2002, Biggs, Kemberr, and Leung a revised version the SPQ (R-SPQ-2F) which contains fewer items and measures only Deep and Surface approaches. The SPQ is a copyrighted survey sold through the Australian Council for Educational Research and not available for sale; therefore, the full SPQ was purchased for this study.

As part of the data collection process, survey respondents had access to the consent form, demographic data survey, and the SPQ. Business and math instructors set the online survey so that students took them only once, in one sitting, during one week. Up to one hour was required to answer the questions online. Business and math classes were chosen for data collection for a couple of reasons. First, the courses represent two distinct areas within academia: business is a social science, while math is a science. Second, the two instructors that collected the data have more than five years of online teaching experience in their respective areas of expertise. Finally, for quality assurance purposes, a math professor with a Ph.D. collected the math samples, and the author of this dissertation collected the business samples, ensuring proper research protocol. One week was required to set up the surveys; another week was required to collect the data. Therefore, the data were collected in a relatively short time period.

Survey Respondents

The setting for this study is a comprehensive two-year college that provides quality education and effective job preparation. As one of more than 30 community and technical colleges in the state, it enables students to finish requirements for certificates or to transfer to four-year institutions. According to the college's Facts and Impacts report (Montgomery, Jones, & Wysocki, 2007), students transferring to four-year institutions comprise 59% of the enrollment, with 41% male and 59% female. Forty-eight percent of the students are enrolled full-time (defined as taking 12 or more credits), while 52% are part-time. Students under the age of 20 account for 38% of the enrollment, while 28% are 20 - 24, 10% are 25 - 29, 9% are 30 - 39, and 15% are over the age of 40.

The 113 survey respondents from this study reflect these institutional demographics. Students enrolled in online courses may be taking all courses online or a combination of classroom and online courses. Currently, the institution does not distinguish online versus classroom enrollment for institutional statistics. Rather, courses are individuated into transfer intent (57%), workforce intent (29%), and basic skills intent (14%). The numbers of survey respondents from each of the four courses were roughly equal. However, online courses are capped at 30 students compared to a cap of 40 students in the classroom. The difference is due to a 10% attrition rate in online courses and because an asynchronous online discussion is difficult with more than 25 students.

All four courses surveyed in this study (Personal Finance, Management Information Systems [MIS], Math Appreciation, and Basic Statistics) are transferable requirements or electives. At this institution, Personal Finance and MIS are designated as business courses, while Math Appreciation and Basic Statistics are designated as math

courses. Students in the introductory Personal Finance course use a decision-making approach to create goals, utilize financial statements, and implement personal financial strategies in a term paper. The Management Information Systems course is an introductory course that integrates software assignments with conceptual information from management, databases, and systems design. The Math Appreciation course has a prerequisite of intermediate algebra and contains conceptual information with real-world application. The Basic Statistics course is intended for social science majors and covers both descriptive and inferential statistics.

Appendix B illustrates several online items. First, a WebCT homepage for a Management Information Systems course is shown, where primarily asynchronous learning tools are housed. The second item is a picture of the Discussion module where different discussions, including Discussion 10 (Reflection), are located. The reflective discussion requires students to consider how their definitions of MIS – both applied and conceptual – have changed over the term. Third, a sample student homepage is displayed. Fourth, the Community Discussion on the Student Homepages module demonstrates a collaborative environment. In Message 3, I asked the students to participate and take responsibility for the knowledge and learning in the class. In Messages 34-38, there is substantial collaboration on creating the banner. Messages 94-134 illustrate collaboration on inserting a picture. Another collaborative feature in WebCT is that students can view everyone's student homepages and look at the pictures, links and text. The Management Information Systems course shown in Appendix B is an example of online collaboration and reflection, housed in WebCT, which was used in this survey. The three additional

online courses utilized to collect the sample are similar in design to maximize higher-order learning, reflective inquiry, and collaboration.

Data Analysis

Data from the Study Process Questionnaire (SPQ) and the demographic survey were downloaded from WebCT into an Excel spreadsheet. Using the demographic data, the SPQ data was sorted into various spreadsheets for employment status, age, program focus, gender, and online experience. The data was then uploaded into the statistical package SPSS for further analysis. This study applied the same analyses as the study which was replicated (Richardson & Newby, 2006).

First, means and standard deviations were calculated for each independent variable or hypothesis (employment status, age, program focus, gender, and online experience) in relation to each dependent variable (motive or strategy). The SPQ consists of 42 questions focusing on six subscales: Surface motives (SM), Surface strategies (SS), Deep motives (DM), Deep strategies (DS), Achieving motives (AM), and Achieving strategies (AS). The formulas used to calculate each of the subscales were input into SPSS; the output in the tables reflected the six motives and strategies as dependent variables. The SPQ uses a five-point Likert scale ranging from 1 (*This item is never or only rarely true of me*) to 5 (*This item is always or almost always true of me*).

Second, independent *t* tests were calculated by program focus, gender, and prior experience. The three motives and strategies with the highest means were used to calculate F values, significance levels, *t* values, and lower and upper confidence levels.

Third, Analyses of Variance (ANOVAs) were calculated for learning strategies and motivations by employment status and age. ANOVAs were chosen for employment status and age because they have four and five categories, respectively.

Data analyses were replicated for this study and consisted of means, standard deviations, *t* tests, and analyses of variance (ANOVAs). The data derived from the 42 SPQ questions and five demographic questions from 113 student respondents are representative of an online population.

Limitations

The study has a few limitations. The surveys were conducted with freshman and sophomore level students enrolled in business and math courses, so it is difficult to generalize the results beyond this online student population. In addition, two instructors collected the data in multiple classes in order to attain a sample of 100 or more; therefore, consistency across data collection administrations could not be guaranteed. Finally, collecting only quantitative data may limit the level of insight that can be gained in regard to students' actual learning motivations and strategies. Admittedly, the survey data indicates only what students think they are thinking.

Summary

In this chapter, the study's methodology, data collection process, and survey respondents were described. Since this study is replicating the Richardson and Newby (2006) study, the data analysis and statistical methods are the same. Finally, the research limitations were reviewed to provide a guide for applying the research findings.

CHAPTER FOUR

RESULTS

This chapter presents the results of the analyses of online demographic survey and SPQ survey responses. The data (n=113) were collected from eight online freshman and sophomore level courses The chapter is organized by presentation of the five hypotheses and two research questions, followed by a brief conclusion.

Results

A repertoire of statistical analyses included means, standard deviations, *t* tests, and ANOVAs generated through the statistical package SPSS. The 11 tables of results are grouped together to address each hypothesis. The means and standard deviations tables use the following abbreviations: Surface motives (SM), Surface strategies (SS), Deep motives (DM), Deep strategies (DS), Achieving motives (AM), and Achieving strategies (AS). In this chapter, each hypothesis is reiterated, followed by a narrative and the data tables.

Hypotheses

1. There are no significant differences among students' learning strategies and motivations due to gender.

In recalling Figure 2, gender is a personal factor, or presage factor, that by definition influences Deep and Achieving motives and strategies as well as outcomes or product performance. In this study, the online sample is 68% female and 32% male (see Table 2). The largest difference in means (.26) between genders occurs in the Deep and Achieving motives. These results are congruent with the general model of student learning, confirming that personal factors influence the learning process and reflect Deep

outcomes and Deep-Achieving outcomes. The Deep outcome (Biggs, 1987) suggests a complex structure of high commitment to personal rather than institutional involvement and is confirmed by the results of female students in Table 2. However, as a caveat, these differences are small from a sample that is more than two-thirds female.

In analyzing the total means for both genders, the Surface motive has the highest mean, followed by the Achieving motive and the Deep motive. The means for the strategies were consistently lower than the motives for both genders and the total means. Table 3 offers more insight, with the Deep motive value ranking the highest at .925, followed by the Surface motive of .523, neither of which is significant. The contradictory gender results support the hypothesis that there are no significant differences in learning strategies and motivations according to gender.

Table 2

Means and Standard Deviations for Gender

Gender							
		SM	DM	AM	SS	DS	AS
Female	Mean	3.5993	3.3191	3.5492	3.1855	3.2356	3.2096
	N	77	77	77	77	77	77
	SD	.65508	.66479	.59899	.59177	.62818	.79153
Male	Mean	3.4372	3.0519	3.2817	3.0556	3.1270	3.0476
	N	33	33	36	36	36	36
	SD	.71065	.65545	.61987	.48569	.64594	.66832
Total	Mean	3.5506	3.2390	3.4640	3.1441	3.2010	3.1580
	N	110	110	113	113	113	113
	SD	.67308	.67037	.61579	.56129	.63304	.75529

Table 3

Independent t Tests by Gender

Gender		Equality of Variances		*t* test for Equality of Means						
		F	Sig.	*t*	df	Sig. (2-tailed)	Mean Dif.	Std. Error Dif.	95% Confidence Interval of the Dif.	
									Lower	Upper
SM	Equal variances assumed	.410	.523	1.159	108	.249	.16203	.13982	-.11513	.43918
	Equal variances not assumed			1.121	56.40	.267	.16203	.14449	-.12737	.45143
AM	Equal variances assumed	.786	.377	2.187	111	.031	.26742	.12228	.02511	.50973
	Equal variances not assumed			2.160	66.40	.034	.26742	.12383	.02022	.51462
DM	Equal variances assumed	.009	.925	1.940	108	.055	.26716	.13774	-.00587	.54020
	Equal variances not assumed			1.951	61.41	.056	.26716	.13696	-.00667	.54099

*p<.05

2. There are no significant differences among students' learning strategies and motivations due to previous experience with online courses.

Previous online experience is a situational presage factor ranging between a Surface approach and an Achieving approach in its relation to the learning process (see Figure 2). Survey results indicate 76% of the participants had previous online course experience, whereas 24% did not. In Table 4, differences among the means are indiscernible between those with no online experience and those with online experience. The total means are highest for the Surface motive, followed by the Achieving motive.

Furthermore, in Table 5, the largest *t* test result is .922 for the Achieving motive, which is not statistically significant. The *t* tests confirm no significance at the .05 level,

so the null hypothesis is correct. The results indicate a trend and are a step towards confirming that situational factors range between Achieving and Surface motives in the learning process (see Figure 2).

An explanation for this finding is that the WebCT courses were designed with a point and click navigation system that is very easy to learn. A factor affecting online experience that was not considered is the availability of a WebCT orientation before taking an online course. In this study, almost half (45%) of the students were under 25 years old and had self-efficacy with technology. Therefore, prior online experience did not significantly affect student motives and learning strategies. The study suggests a trend that Achieving motives are employed by students and that prior online experience is not a factor in this trend.

Table 4

Means and Standard Deviations for Experience

Experience		SM	DM	AM	SS	DS	AS
No experience	Mean	3.4396	3.2857	3.4011	3.1374	3.1319	3.2967
	N	26	26	26	26	26	26
	SD	.76870	.68809	.60071	.60539	.64514	.70788
Experience	Mean	3.5731	3.2233	3.5057	3.1067	3.2102	3.1757
	N	87	87	87	87	87	87
	SD	.66455	.66782	.60248	.58384	.61728	.76022
Total	Mean	3.5424	3.2377	3.4817	3.1138	3.1922	3.2035
	N	113	113	113	113	113	113
	SD	.68861	.66995	.60102	.58627	.62175	.74715

Table 5

Independent t Tests by Experience

Experience		Equality of Variances		*t* test for Equality of Means						
		F	Sig.	*t*	df	Sig. (2-tailed)	Mean Dif.	Std. Error Dif.	95% Confidence Interval of the Dif.	
									Lower	Upper
SM	Equal variances assumed	1.203	.275	-.866	111	.388	-.13351	.15408	-.43883	.17181
	Equal variances not assumed			-.801	36.88	.428	-.13351	.16674	-.47140	.20438
AM	Equal variances assumed	0.010	.922	-.778	111	.438	-.10465	.13457	-.37131	.16201
	Equal variances not assumed			-.779	41.20	.440	-.10465	.13435	-.37594	.16664
AS	Equal variances assumed	0.339	.561	.723	111	.471	.12101	.16735	-.21061	.45262
	Equal variances not assumed			.752	43.69	.456	.12101	.16098	-.20350	.44551

*p<.05

3. There are no significant differences among students' learning strategies and motivations due to the subject matter of online courses.

The student responses from both programs were relatively equal, with 51% taking a business course and 49% taking a math course. In Table 6, the differences in the means for business and math programs were indiscernible with substantial standard deviations. The total means are the largest means for the Surface motive, followed closely by the Achieving motive.

As shown in Table 7, *t* tests indicated no significant difference in the motives and strategies. Therefore, the null hypothesis is supported that there are no significant

differences among students' learning strategies and motivations due to the subject matter of online courses.

Table 6

Means and Standard Deviations for Program Focus

Program		SM	DM	AM	SS	DS	AS
Math	Mean	3.6545	3.1558	3.3922	3.1013	3.1169	3.0831
	N	55	55	55	55	55	55
	SD	.66876	.72337	.59490	.58105	.64482	.72931
Business	Mean	3.4261	3.3251	3.5862	3.1724	3.2414	3.2660
	N	58	58	58	58	58	58
	SD	.69032	.60597	.58056	.58490	.60207	.75898
Total	Mean	3.5373	3.2427	3.4918	3.1378	3.1808	3.1770
	N	113	113	113	113	113	113
	SD	.68652	.66812	.59300	.58152	.62358	.74702

Table 7

Independent t Tests by Program Focus

Program		Equality of Variances		*t* test for Equality of Means						
		F	Sig.	*t*	df	Sig. (2-tailed)	Mean Dif.	Std. Error Dif.	95% Confidence Interval of the Dif.	
									Lower	Upper
SM	Equal variances assumed	.264	.608	1.785	111	.077	.22844	.12797	-.02514	.48201
	Equal variances not assumed			1.787	110.94	.077	.22844	.12786	-.02492	.48180
AM	Equal variances assumed	.051	.821	-1.754	111	.082	-.19400	.11059	-.41314	.02514
	Equal variances not assumed			-1.753	110.32	.082	-.19400	.11066	-.41330	.02530
AS	Equal variances assumed	.038	.846	-1.305	111	.195	-.18289	.14016	-.46063	.04840
	Equal variances not assumed			-1.306	110.97	.194	-.18289	.14001	-.46033	.09455

*p<.05

This result was expected because freshman and sophomore students are completing business and math prerequisites for upper division courses in the major area of study. In Tables 6 and 7, the linkages are apparent for the Achieving motive, which mirror the results of the hypothesis about prior online experience.

4. There are no significant differences among students' learning strategies and motivations due to age.

Table 8 shows that 45% of the students comprise the age group of 18-25, 34% accounted for ages 26-35, 16% represented those age 36-45, and 5% were over the age of 46. Although there were small variations in the means, the standard deviations were substantial. The total means are highest for the Surface motive, followed closely by the Achieving motive. The Surface motive mean in the 26-35 age bracket substantially exceeds the total Surface means for all ages. In the Achieving motive category, this occurs for two age groups (26-35 and 36-45). These results suggest a relationship between Surface motives and age as well as between Achieving motives and age.

Additionally, a one-way analyses of variance (ANOVAs) on employment status and age were conducted to examine differences in the six learning strategies and motivations because they have more than two variables. The ANOVAs are utilized when the independent variable or variables form categories and the dependent variable is continuously distributed (Rudestam & Newton, 2001). There are no significant motives and strategies in any of the age categories at the .05 level. Therefore, the hypothesis that there are no significant differences in motivations and strategies due to age is true.

Table 8

Means and Standard Deviations for Age

Age		SM	DM	AM	SS	DS	AS
18 - 25	Mean	3.4538	3.1765	3.3950	3.0616	3.1457	3.1709
	N	51	51	51	51	51	51
	SD	.70201	.62765	.64434	.59196	.65184	.79232
26 - 35	Mean	3.7105	3.2970	3.5827	3.1955	3.1767	3.0639
	N	38	38	38	38	38	38
	SD	.61016	.75912	.58041	.56309	.63925	.70119
36 - 45	Mean	3.4444	3.3175	3.5714	3.2381	3.3254	3.4683
	N	18	18	18	18	18	18
	SD	.79144	.62088	.45966	.64449	.55395	.67861
46 - 55	Mean	3.4571	3.1429	3.5429	3.1143	3.0286	3.0571
	N	5	5	5	5	5	5
	SD	.70276	.80812	.63407	.48865	.59247	.86661
56 - 65	Mean	3.2857		3.2857	3.1429	3.2857	3.1429
	N	1		1	1	1	1
	SD						
Total	Mean	3.5373	3.2385	3.4918	3.1378	3.1808	3.1770
	N	113	112	113	113	113	113
	SD	.68652	.67563	.59300	.58152	.62358	.74702

Table 9

Analyses of Variance (ANOVAs) for Learning Strategies and Motivations by Age

Age		Sum of Squares	df	Mean Square	F	Sig.
SM	Between groups	85.585	4	21.396	.924	.453
	Within groups	2500.963	108	23.157		
	Total	2586.549	112			
DM	Between groups	23.726	3	7.909	.347	.791
	Within groups	2459.051	108	22.769		
	Total	2482.777	111			
AM	Between groups	47.136	4	11.784	.676	.610
	Within groups	1882.740	108	17.433		
	Total	1929.876	112			
SS	Between groups	29.706	4	7.427	.439	.780
	Within groups	1826.152	108	16.909		
	Total	1855.858	112			
DS	Between groups	27.775	4	6.944	.356	.839
	Within groups	2106.260	108	19.502		
	Total	2134.035	112			
AS	Between groups	102.304	4	25.576	.933	.448
	Within groups	2960.245	108	27.410		
	Total	3062.549	112			

*p<.05

5. There are no significant differences among students' learning strategies and motivations due to employment status.

Employment data illustrate that 30% of the participants were full-time students, 30% were employed full-time/full-time students, 31% were employed full-time/part-time students, and 9% were part-time students only. Although there are small variations in the means, the standard deviations are substantial. In comparing the total means, the Surface motive and Achieving motive were the highest in the 3.5 range.

Table 10

Means and Standard Deviations for Employment

Employment		SM	DM	AM	SS	DS	AS
Part-time student	Mean	3.5000	2.9683	3.3000	3.2000	3.1000	2.7143
	N	10	9	10	10	10	10
	SD	.78318	.58805	.38949	.65014	.56364	.53026
Full-time student	Mean	3.5546	3.2296	3.5672	3.1891	3.1765	3.2815
	N	34	28	34	34	34	34
	SD	.67444	.67494	.62566	.51654	.58221	.80696
Employed full-time & full-time student	Mean	3.5388	3.3067	3.5184	3.0735	3.1592	3.1592
	N	35	34	35	35	35	35
	SD	.62567	.65902	.56941	.59749	.64707	.75336
Employed full-time & part-time student	Mean	3.5294	3.2101	3.4454	3.1345	3.2311	3.2269
	N	34	34	34	34	34	34
	SD	.75718	.74955	.63768	.62413	.67650	.70874
Total	Mean	3.5373	3.2259	3.4918	3.1378	3.1808	3.1770
	N	113	105	113	113	113	113
	SD	.68652	.68477	.59300	.58152	.62358	.74702

In Table 11, the results of the one-way analyses of variance indicate that there are no significant results for the differences in employment and student status. Thus, the hypothesis that there are no significant differences among students' learning strategies and motivations due to employment status is true. Once again, the results indicate a trend that freshman and sophomore students use the Surface and Achieving motives frequently.

Table 11

Analyses of Variance (ANOVAs) for Learning Strategies and Motivations by Employment

Employment		Sum of Squares	df	Mean Square	F	Sig.
SM	Between groups	1.289	3	.430	0.018	.997
	Within groups	2585.260	109	23.718		
	Total	2586.549	112			
DM	Between groups	40.592	3	13.531	0.582	.628
	Within groups	2348.969	101	23.257		
	Total	2389.562	104			
AM	Between groups	32.305	3	10.768	0.619	.604
	Within groups	1897.571	109	17.409		
	Total	1929.876	112			
SS	Between groups	13.392	3	4.464	0.264	.851
	Within groups	1842.466	109	16.903		
	Total	1855.858	112			
DS	Between groups	8.245	3	2.748	0.141	.935
	Within groups	2125.790	109	19.503		
	Total	2134.035	112			
AS	Between groups	127.800	3	42.600	1.582	.198
	Within groups	2934.749	109	26.924		
	Total	3062.549	112			

*p<.05

In the section above, the results of the 11 tables have been linked to the five hypotheses. Next, the two research questions are answered by utilizing the results from the five hypotheses.

Research Questions

1. What strategies and motivations (Deep, Surface, or Achieving) are students utilizing in their online courses?

The research questions are answered through a compilation of responses from the five hypotheses. When considering the means for gender (see Table 2), experience (see Table 4), program focus (see Table 6), age (see Table 8), and employment status (see Table 10), the total means were the highest for Surface motives and Achieving motives, within a very small range of 3.4+ - 3.5+.

Revisiting Table 1, a Surface motive refers to meeting minimal requirements and is a balancing act between failing and working more than is necessary. Didactically, an Achieving motive is to enhance ego and self-esteem through competition and to obtain the highest grades, whether or not the material is interesting. In connecting to the general model of student learning, the Surface-Achieving outcome (see Figure 2) is rich in factual details but unstructured and low in involvement.

In applying a common sense approach to definitions and outcomes, the trend of online freshman and sophomore students using Surface and Achieving motives is reasonable since they may be developing cognitive skills. At this stage in the education process, students may be searching for the right area in which to major and have not developed a deep interest in academia since they are still completing prerequisites. The second research question addresses specific independent variables.

2. Do gender, prior online experience, program focus, age, and employment status affect cognitive engagement?

In answering the second research question, the results of the independent variables are summarized and reiterated. The results of the gender data were

contradictory and were found not to affect cognitive engagement. Prior online experience was found to have no effect on cognitive engagement. For program focus, specifically business and math courses, the no significant results so this variable does not affect cognitive engagement. For the age and employment hypotheses no significant results were returned on this study.

Although there were not significant results, some noteworthly trends emerged. For gender, there were minimal differences in the means (.26) between genders that occurred in the Deep and Achieving motives. Also for gender, the total means were the highest for the Surface motive and Achieving motive. Results from this study confirm that prior online experience, as a situational or presage factor, does not affect cognitive engagement. However, there is a trend between Achieving and Surface motives and prior online experience. For this population, program focus does not affect cognitive engagement; however, an Achieving motive emerged from both data tables. Upon further analysis, there was a trend within the age variable, suggesting a relationship between Surface and Achieving motives and age. For employment, no significant results were discovered; however, the results indicate a trend that the Surface and Achieving motives are most common.

In connecting two of the personal variables, age and gender, back to the general model of learning (see Figure 2), there are contradictory results. For gender, there is a spurious connection of gender comparison that links the Deep approach to a deep outcome which is congruent with the model. Upon closer inspection, the total gender means were highest for the Surface and Achieving motives, as well as for age, which doesn't work as well in the model. For the presage or situational variables, program

focus, employment, and prior online experience, the Surface and Achieving motives relate to the process or Achieving and Surface approaches, which in turn produce Surface-Achieving outcomes.

Previous Study

Richardson and Newby (2006) collected their data in 2003 and produced results contradictory to this study. They reported the Achieving motive as significant, in favor of males, from an online sample that was equal in gender. It is possible to explain differences between this study and the Richardson and Newby study due to the gender mix, undergraduate versus graduate student sample, and societal changes between data collection periods (i.e., 2003 and 2007).

They also found the Deep and Achieving strategies significant for students with prior online experience. An explanation may be that their study was conducted in 2003 with graduate students in which 40% of the sample had no prior online experience; the majority (60%) of the students were in the age range of 25-35, which is demographically different. In the current study, 34% of the students were in the 25-35 age range, while 45% of the students were in the 18-25 age range.

In the previous study, they found the Surface motive and Surface strategy to be significant for all age groups, with the exception of the 56 through 65 age group. Although there were indications of higher means in the Surface motives and Achieving motives in this study, the differences in results between studies could be explained by differences in academic level and age. In this dissertation study, the 45% of students in the 18-25 age group and were freshman and sophomores at a community college.

In comparing the results of this study to the Richardson and Newby (2006) study, the means of the SPQ presented ranged from 2.00 to 2.44 for online graduate students. In contrast, this study produced means of 2.97 to 3.71 for freshman and sophomore students on the SPQ. In reviewing Appendix A, a response of 2 indicates that *this item is sometimes true of me,* a response of 3 indicates that *this item is true of me about half the time,* and a 4 indicates that *this item is frequently true of me.* Additionally, for results on a five point scale, there is a tendency for values to regress to the middle (i.e., 3), which may account for some of the responses. The difference between the two studies among the responses of *this item is sometimes true of me* and *this item is true of me about half the time* is interesting since the more contemporary study produced more positive responses such as *this item is frequently true of me*. However, there were substantial standard deviations (.5 to .7) in this study, which indicate a wide range of responses to the survey items.

The significant differences in the results of the two studies for two different populations make each study of online cognitive engagement important. This is a unique study because there has been little testing of cognitive engagement, using this mode, framework and context.

Summary

This chapter presented the study's results in relation to the five hypotheses, including a narrative and details of the data analyses such as means and standard deviations, *t* tests, and ANOVAs for each of the independent variables (gender, prior online experience, program focus, age and employment status). The analysis confirmed

the five null hypotheses, which in turn provided answers for the two research questions. In the next chapter, the implications of the results are discussed.

CHAPTER FIVE

IMPLICATIONS

Theoretical, policy, and practical implications of the findings are the substance of this chapter. In the previous chapter, the research questions were answered and the significant differences between the Richardson and Newby (2006) study and this study were analyzed. The implications serve as a conclusion for this dissertation and chart a course for future research.

Theoretical Implications

Cognitive development occurs in distinct stages, with thought processes at each stage being qualitatively different from those at other stages. The cognitive theories of Piaget (1952) and Perry (1970, 1981) illustrate changes in knowledge and positions during cognitive growth. (Wells, n.d.) Piaget posited cognitive growth in terms of assimilation and accommodation, while Perry suggested positions or transitions of cognitive growth. Within the area of cognition, a model of cognitive development and engagement was tested through the use of the SPQ.

The general model of student learning is the model in this study tested using Biggs's (1987) Study Process Questionnaire. Although this study replicates, the Richardson and Newby (2006) study, by using the same CMC context and the same instrument, the SPQ, this dissertation makes new connections. The theoretical contribution of this study to the literature is by nesting a model within the Community of Inquiry model, which is within the CMC context. This is crucial because cognitive

learning or engagement occurs within a Community of Inquiry made possible through technology.

Within the general model of student learning (see Figure 2), there are five outcomes ranging from the Deep outcome, at the top of the model, to the Surface outcome at the bottom of the model. The most prevalent outcome of this study is the Achieving outcome, which is in the center, or the third outcome from the top or bottom of the product performance part of the model. In connecting the range of the means tables, 2.97 to 3.71, on a five point likert scale, to the middle or Achieving outcome (see Table 1).

The Achieving outcome translates to students achieving their goals of a passing grade and completing the class. In theory, a general Surface-Achieving outcome was found for the total study. It is important to consider the large standard deviations in the data, which indicate a large range of answers. Not all students enrolled in these classes are freshmen or sophomores, since some students take classes to meet the CPA 150 hour requirement or to satisfy a class that should have been taken as a prerequisite a few years ago. Thus, it is misleading to conclude that all students in the sample utilize a Surface-Achieving strategy.

In summary, the cognitive theories provide an explanation of how learning works and how students develop. The general model of student learning provides a graphic depiction of what the constructs measured. The combination of the cognitive theories and the model implications ultimately influence policy and practical implications.

Policy Implications

Higher education policy decisions have implications for faculty, students, and administrators. According to Newman, Couturier, and Scurry (2004), the United States has always had a diverse and competitive system of higher education. Since virtual or online programs became available, the competition among traditional, nonprofit institutions has intensified. Exacerbating this competition is the plethora of aggressive for-profit universities and colleges that continue to enter the market. The availability of online courses has provided students a way to complete degrees off campus at academic institutions ranging from state and private institutions to primarily online institutions.

The impact of technology on teaching and learning challenges all academic institutions as technology fees and budgets are stretched to acquire and implement new hardware and software. The tuition rate policy is generally the same for online and face-to-face classes for the same number of credits. There are additional costs of offering courses in a virtual environment such as a webmaster who serves as a resource for large online populations and the license for either BlackBoard or WebCT. There may be telecommunication charges between campuses for operators or technical support. Policies related to virtual classes and technology have been developed on an ad hoc basis and will continue to develop through future decades.

Fortunately, much of the hysteria about online courses replacing the traditional classroom has shifted to the realization that online course work is a niche market for students and faculty who self-select this specialized type of learning and course delivery. There is no differentiation between courses entirely online, a hybrid, or an enhanced correspondence course. In this study, the two business courses are completely online, including testing, so that students can access it worldwide. In contrast, there are online

courses that offer no collaborative and reflective discussions. Between the two contrasts are the two math courses, used in this study, which have exams on campus and are more typical of online courses. The policies for online course refinement has yet to be debated, created, and implemented.

In general, cognitive processes influence learning, and everyone controls his or her own learning. New information is most easily acquired when people can associate it with things they have already learned. The online courses in this study are typical of a collaborative and reflective environment. At the institution where this study took place, the policy for capping enrollment is set at 30 per online class; this is fewer than the usual 40 or 50 in the classroom because of the nature of email and online discussions. Faculty and administrators at this institution understand the workload of online instructors and the need for small discussion groups.

Finally, as policies related to virtual classes continue to mature and develop, institutions have realized that faculty must provide course quality whether in an online or face-to-face environment. A major component of course assessment is critical thinking, or cognitive engagement, which is receiving more recognition. Policies on virtual learning and technology are in the same primary stages as the technology of online courses. They will continue to evolve and mature as will the virtual learning environment.

Practical Implications

This research illustrates the diversity of age, employment, gender, online experience, and program focus of an online community college population. It reiterates

the need for online courses to serve diverse populations with a range of learning styles and it highlights the Achieving outcome trend for the freshman and sophomore population.

An objective of teaching and learning is to cognitively engage students through their coursework. To understand learning effectiveness for asynchronous learning is to appreciate the reflective and collaborative properties of this communication medium. Garrison (2003) suggests two effective learning practices; reflection and collaboration. The strength of online courses is the use of reflection through written, asynchronous communication. A practical implication is to make available the opportunity for learners to revise and refine their comments and ideas. He suggests the permanent nature of written communication in an online context provides for a systematic approach to construct meaning.

Understanding Perry's (1970, 1981) model sheds some light on student perspectives that are different from instructor expectations. Dualistic students tend to respond negatively to instructors and question the credibility of those who fail to respond immediately with firm answers. If told that a number of responses to an assignment might be appropriate and correct, they are disturbed by the idea of multiple answers.

Another practical implication is using course design to maximize reflective and collaborative properties, understanding that students use the Achieving motive. This can be accomplished through the course design of assignments, assessments, and projects that incorporate all levels of learning, especially higher-order thinking (Bloom, 1956; Henri, 1992), and are applicable to technology-oriented activities (Stoney & Oliver, 1999).

Implementations occurs by the teacher providing central ideas and allowing students to reflect, collaborate, and connect their ideas and thoughts on the subject (see Appendix B). For the student, cognitive engagement occurs through questioning, connecting, and challenging discussions, readings, and assignments.

In addition to course design, teaching strategies should include providing varying contexts for the materials and creating an environment that provides scaffolding to encourage student responsibility or create metalearning. Across the academic curriculum, instructors should strive to increase motivation and learning through providing support and strategies. In the literature review, Woods and Ebersole (2003) suggest communal scaffolding recognizes that successful online learning must structure social support if learners are optimally challenged to maximize learning. In an online environment, achieving maximum student learning requires a combination of social presence, cognitive presence or critical thinking, and teaching or instructor presence in order to help students create motivation and learning strategies. Although the course design and instructor are primary components of the learning process, ultimately the learning or metalearning takes places within the student.

Instructors can utilize the implications of this research since they comprise the primary audience since they work with students online. This research also has implications for course designers since course construction may affect social presence and, ultimately, teaching presence.

Future Research

Future research will involve additional cognitive engagement studies including the design and instructor perspective. The context for future research will be within an

active, collaborative and reflective online environment. Given that not all online courses have these characteristics, it will be challenging to find these environments, gain permission and access them. There may be ways to find these environments through meeting some of the WebCT/Blackboard webcast participants online.

A future cognitive engagement among junior and senior online students would serve as a bridge between the graduate population studied by Richardson and Newby (2006) and this contemporary study of freshmen and sophomores. The replication of these two studies would continue to bolster the foundation for future studies related to cognitive engagement. This study was designed to study students; however, it would be interesting to research cognitive engagement from an instructor perspective.

Additionally, the elements of designing a community of learning would be interesting to research, especially as new software versions become available with new tools or integrated technologies. Tangential to that line of research is the research of the institutional policies, whether integrated or separate distance degree programs (DDP). At the institution of this study, there is no separate online degree program coordinator or department, instead online courses are integrated into each department.

When I started my Ph.D. program in 2001, I knew I wanted to conduct research in this area; this study has further strengthened my desire to investigate cognitive engagement in online learning as I develop my future program of research.

Summary

Theoretical, policy, and practical implications were epitomized in this chapter, including directions for future research. Education in virtual, primarily asynchronous environments constitutes a growing trend operating in a new communication medium

with unique properties. The fundamental cognitive theories of Piaget (1952) and Perry (1970, 1981) explain how and why learning occurs, which contributes another level of understanding to the general model of student learning. Current policies for online learning provide guidance for future policies and procedures.

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Appendix A

Appendix A

Demographic and Study Process Questionnaires

Demographic Survey (similar to Richardson and Newby, 2006)

1. What is your gender? (a) male, (b) female.

2. Do you have previous experience with online courses? (a) yes, (b) no.

3. What is your program focus? (a) business, (b) math.

4. Which age bracket describes you? (a) 18-25, (b) 26-35, (c) 36-45, (d) 46-55, (e) 56-65. (If under 18, do not participate.)

5. Are you a (a) part-time student, (b) full-time student (12 credits or more), (c) employed full-time/full-time student, (d) employed full-time/part-time student?

Study Process Questionnaire (SPQ)

What the SPQ is About
On the following pages are a number of questions about your attitudes towards your studies and your usual ways of studying.

There is no right way of studying. It all depends on what suits your own style and the courses you are studying. The following questions have been carefully selected to cover the more important aspects of studying. It is accordingly important that you answer each question as honestly as you can. If you think that your answer to a question would depend on the subject being studied, give the answer that would apply to the subject(s) most important to you.

How to Answer
For each question there are five choices:

1 - this item is never or only rarely true of me
2 - this item is sometimes true of me
3 - this item is true of me about half the time
4 - this item is frequently true of me
5 - this item is always or almost always true of me

Example:

Q: I study best with the radio on.

- If this was almost always true of you, you would choose 5.

- If you only sometimes studied well with the radio on, you would choose 2.

Select the answer that best fits your immediate reaction. Do not spend a long time on each item: your first reaction is probably the best one. Please answer each item.

Be sure to save your answers as you go and submit the survey (click Finish button) when you are finished.

Do not worry about projecting a good image. Your answers are ANONYMOUS and CONFIDENTIAL.

Thank you for your cooperation.

1. I chose my present courses largely with a view to the job situation when I graduate rather than out of their intrinsic interest to me.

2. I find that at times studying gives me a feeling of deep personal satisfaction.

3. I want top grades in most or all of my courses so that I will be able to select from among the best positions available when I graduate.

4. I think browsing around is a waste of time, so I only study seriously what's given out in class or in the course outlines.

5. While I am studying, I often think of real life situations to which the material that I am learning would be useful.

6. I summarize suggested readings and include these as part of my notes on a topic.

7. I am discouraged by a poor mark on a test and worry about how I will do on the next test.

8. While I realize that truth is forever changing as knowledge is increasing, I feel compelled to discover what appears to me to be the truth at this time.

9. I have a strong desire to excel in all my studies.

10. I learn some things by rote, going over and over them until I know them by heart.

11. In reading new material I often find that I'm continually reminded of material I already know and see the latter in a new light.

12. I try to work consistently throughout the term and review regularly when the exams are close.

13. Whether I like it or not, I can see that further education is for me a good way to get a well-paid or secure job.

14. I feel that virtually any topic can be highly interesting once I get into it.

15. I would see myself basically as an ambitious person and want to get to the top, whatever I do.

16. I tend to choose subjects with a lot of factual content rather than theoretical kinds of subjects.

17. I find that I have to do enough work on a topic so that I can form my own point of view before I am satisfied.

18. I try to do all of my assignments as soon as possible after they are given out.

19. Even when I have studied hard for a test, I worry that I may not be able to do well in it.

20. I find that studying academic topics can at times be as exciting as a good novel or movie.

21. If it came to the point, I would be prepared to sacrifice immediate popularity with my fellow students for success in my studies and subsequent career.

22. I generally restrict my study to what is specifically set as I think it is unnecessary to do anything extra.

23. I try to relate what I have learned in one subject to that in another.

24. After a lecture or lab I reread my notes to make sure they are legible and that I understand them.

25. Lecturers shouldn't expect students to spend significant amounts of time studying material everyone knows won't be examined.

26. I usually become increasingly absorbed in my work the more I do.

27. One of the most important considerations in choosing a course is whether or not I will be able to get top marks in it.

28. I learn best from lecturers who work from carefully prepared notes and outline major points neatly on the blackboard.

29. I find most new topics interesting and often spend extra time trying to obtain more information about them.

30. I test myself on important topics until I understand them completely.

31. I almost resent having to spend a further three or four years studying after leaving school, but feel that the end results will make it all worthwhile.

32. I believe strongly that my main aim in life is to discover my own philosophy and belief system and to act strictly in accordance with it.

33. I see getting high grades as a kind of competitive game, and I play it to win.

34. I find it best to accept the statements and ideas of my lecturers and question them only under special circumstances.

35. I spend a lot of my free time finding out more about interesting topics which have been discussed in different classes.

36. I make a point of looking at most of the suggested readings that go with the lectures.

37. I am at college/university mainly because I feel that I will be able to obtain a better job if I have a tertiary qualification.

38. My studies have changed my views about such things as politics, my religion, and my philosophy of life.

39. I believe that society is based on competition and schools and universities should reflect this.

40. I am very aware that lecturers know a lot more than I do and so I concentrate on what they say as important rather than rely on my own judgment.

41. I try to relate new material, as I am reading it, to what I already know on that topic.

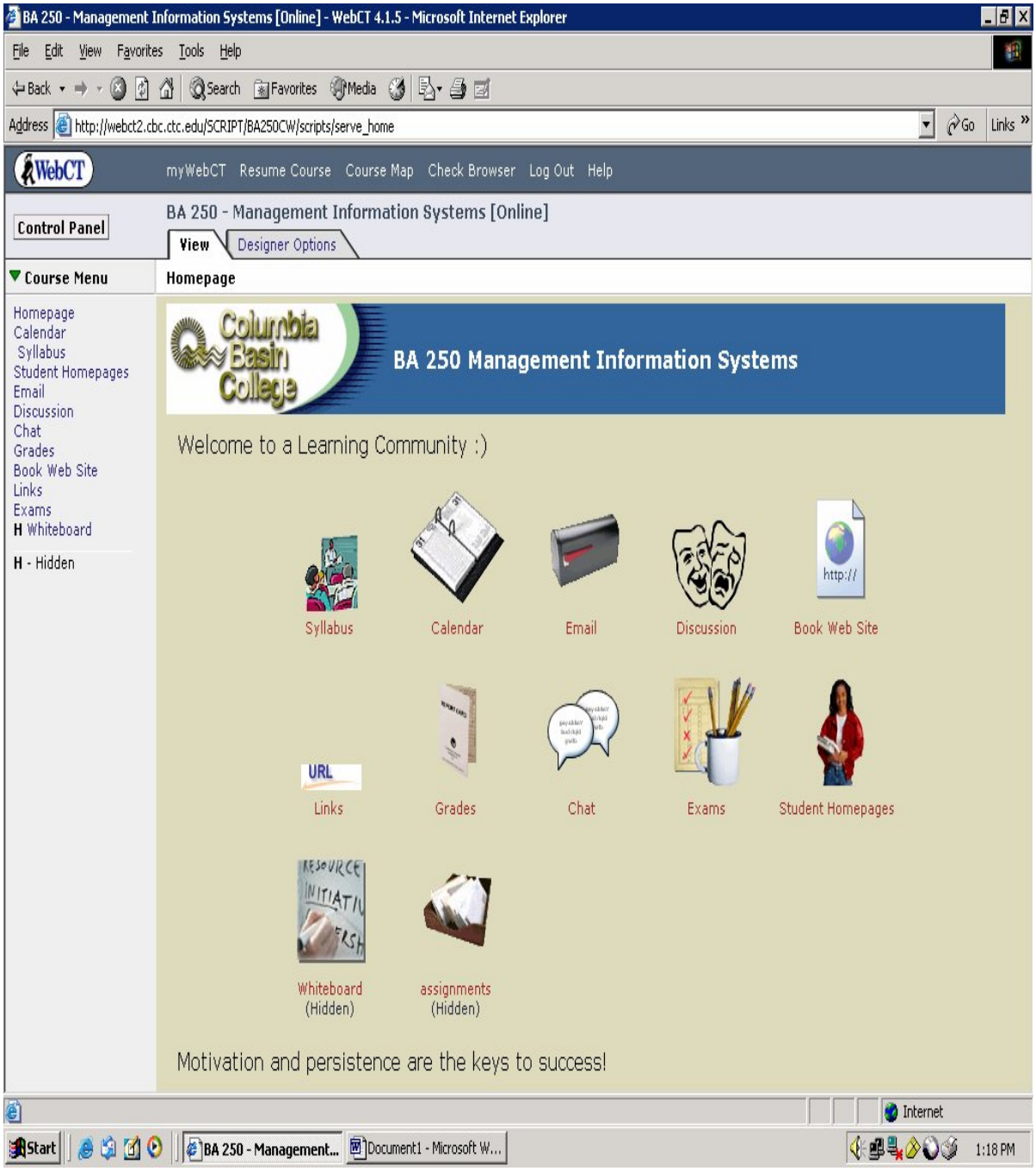
42. I keep neat, well-organized notes for most subjects.

Appendix B

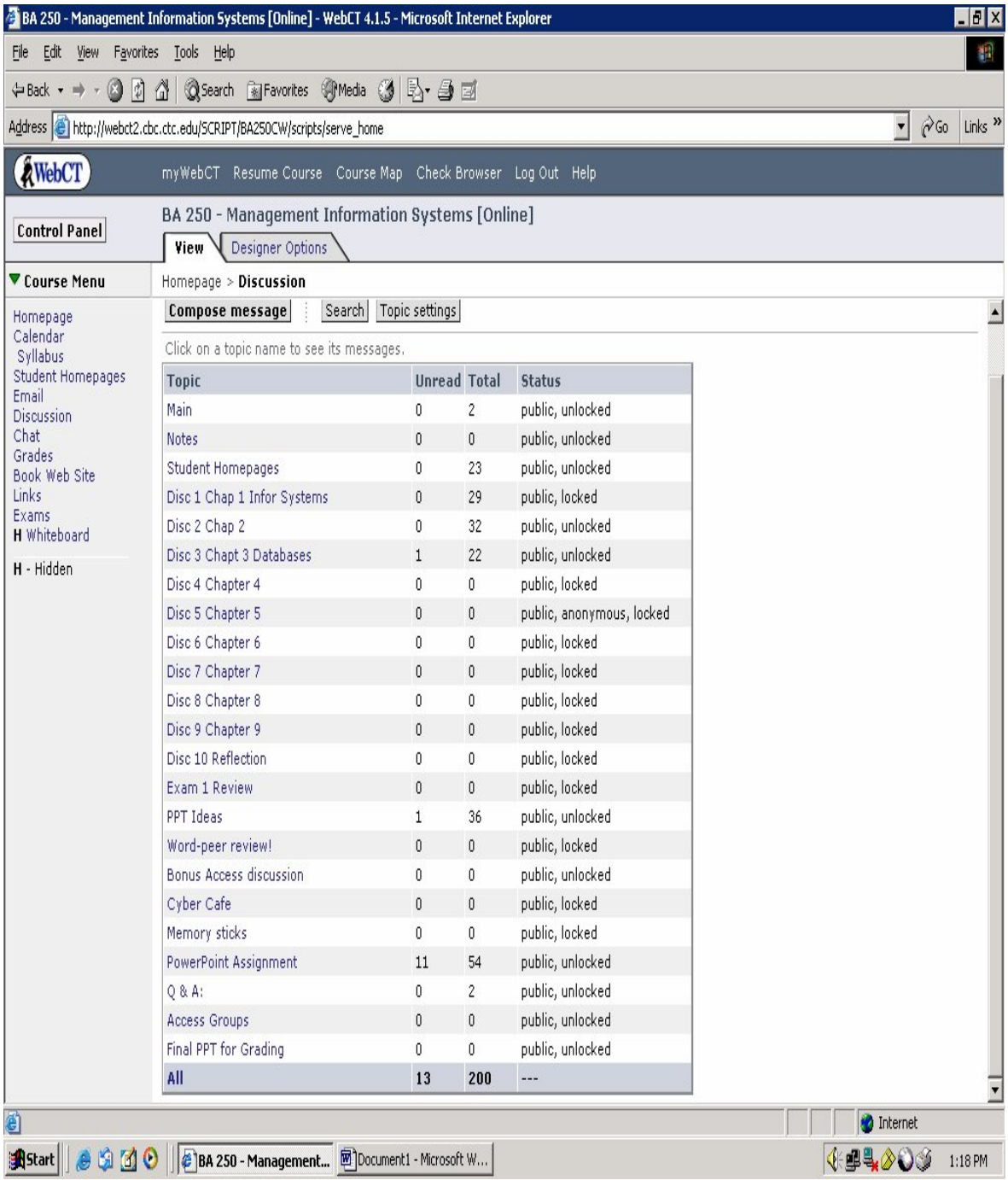
Appendix B

Course Homepage, Discussion Module, Community Discussion, Sample Student Homepage, and Syllabus

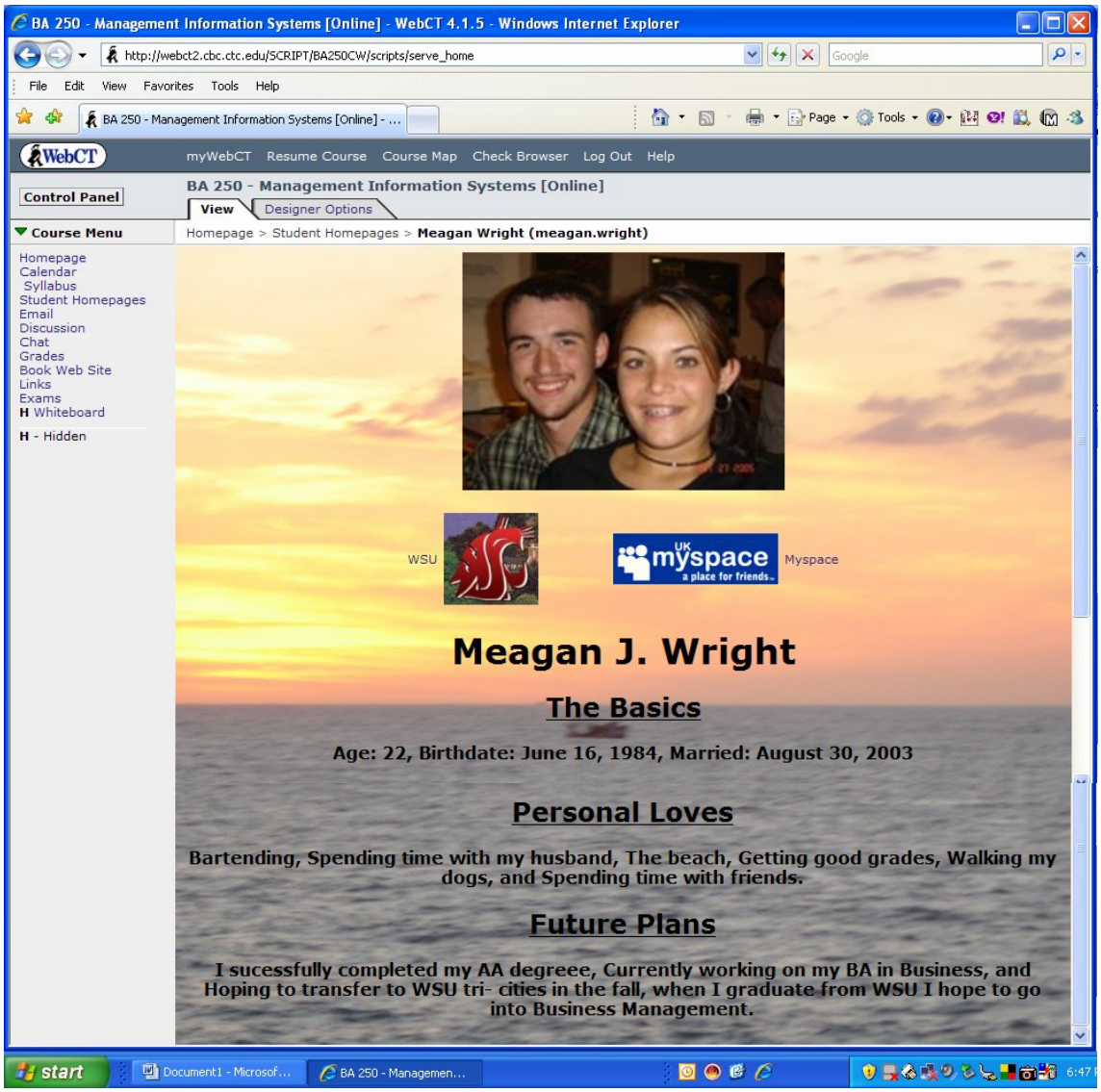
WebCT Course Homepage



Discussion Module



Student Homepage Sample



Community Discussion on Student Homepages

Compiled Messages

Download Close

Message no. 3
Posted by Carol Wysocki (BA250CW) on Friday, March 30, 2007 9:37pm
Subject: Start with
Please start by creating a banner or by adding a link to one of your favorite websites. Use this discussion space to post a question and it is everyone's responsibility to respond to questions. This is a collaborative knowledge environment or learning community. Let's share the knowledge and enjoy our term together.

Message no. 24[Branch from no. 3]
Posted by Erica M Pagel (erica.m.pagel) on Monday, April 2, 2007 2:30pm
Subject: Re: Start with
The student home pages just have to be about ourselves not necessarily our business we are creating. Right? Or did I read that wrong?

Message no. 25[Branch from no. 24]
Posted by Sharon E Wilder (sharon.e.wilder) on Monday, April 2, 2007 3:37pm
Subject: Re: Start with
I was thinking the homepage would be aligned with the business plan/idea but maybe I misunderstood.

Message no. 27[Branch from no. 25]
Posted by Sharon E Wilder (sharon.e.wilder) on Monday, April 2, 2007 4:44pm
Subject: info from the Syllabus
20 Student Homepage in WebCT (Required a background, a picture, a link, and text about yourself-5 points each).

Message no. 28[Branch from no. 27]
Posted by Erica M Pagel (erica.m.pagel) on Monday, April 2, 2007 9:19pm
Subject: Re: info from the Syllabus
Ya i found that too. Thank you.

Message no. 30[Branch from no. 24]
Posted by Carol Wysocki (BA250CW) on Tuesday, April 3, 2007 7:39am
Subject: Re: Start with
right-it's about yourself :)

Message no. 34
Posted by Anthony Boone (anthony.boone) on Tuesday, April 3, 2007 10:59am
Subject: little help
I'm not the most computer literate person. I was wondering if there is some sort of
reference we can look to for help in making this web page because I don't know how to make a banner or homepage and would appreciate all the advise I can get thank you.
Tony

Message no. 35[Branch from no. 34]
Posted by Kathleen A Parson (kathleen.a.parson) on Tuesday, April 3, 2007 11:13am
Subject: Re: little help
I was feeling the same way until I went in an played with it a little bit. Use the boxes on
the right side of the screen, it seems fairly forgiving, it is easy to change things you have entered. You can add a banner from here and text and that is as far as I have gotten. You can also add pictures and links or items saved on you computer. Click on a box and
see what happens. Good luck.
Kathy

Message no. 36[Branch from no. 35]
Posted by Sharon E Wilder (sharon.e.wilder) on Tuesday, April 3, 2007 11:23am
Subject: Re: little help
I agree w/Kathleen - it is not the most dynamic interface but pretty
simple once you start clicking around - it has a default banner, you can just add test to that one, or you can upload your own. my biggest issue is resizing jpg and all picture type files to a size that looks ok on
the website.

sharon

Message no. 37[Branch from no. 36]
Posted by Anthony Boone (anthony.boone) on Tuesday, April 3, 2007 12:07pm
Subject: Re: little help
thanks for the replies. You were right it's not that hard to figure out once you start
messing around with it

Message no. 38[Branch from no. 37]
Posted by Carol Wysocki (BA250CW) on Tuesday, April 3, 2007 12:17pm
Subject: Re: little help
Yeh, it's a pretty limited program but it's easy to use.

Message no. 39[Branch from no. 37]
Posted by Carol Wysocki (BA250CW) on Tuesday, April 3, 2007 12:17pm
Subject: Re: little help
Feel free to look at everyone else's page to pick up some cool ideas!

Message no. 40
Posted by Sharon E Wilder (sharon.e.wilder) on Tuesday, April 3, 2007 1:04pm
Subject: HasmiK - comment on your student page
I couldn't find your name in the email listing so will try to send you a
note this way. I was reading your homepage and noticed a small spelling error. In the very last sentence you talk about some useful links. You spelled weather instead of whether. One of those tricky words :)
Just thought you would want to know. BTW, Your homepage looks great!

sharon

Message no. 42
Posted by Kathleen A Parson (kathleen.a.parson) on Tuesday, April 3, 2007 5:48pm
Subject: Sizing Icons for links
HI,
Help, how do you size icons for links? I have tried many things but I think I am not getting something.
Thanks, Kathy

Message no. 43[Branch from no. 39]
Posted by Sonia A Valdez (sonia.a.valdez) on Tuesday, April 3, 2007 9:55pm
Subject: Re: little help
I am having problems with the homepage all I got is a picture and a banner any help anyone.

Thanks,
Sonia

Message no. 45[Branch from no. 42]
Posted by Sharon E Wilder (sharon.e.wilder) on Wednesday, April 4, 2007 11:13am
Subject: Re: Sizing Icons for links
I was able to open the gif, jpg or ico file using Microsoft office picture

manager, but would imagine any photoshop editor type of application would work. Then under an edit menu there should be a resize option.

good luck

Message no. 48[Branch from no. 45]
Posted by Kathleen A Parson (kathleen.a.parson) on Wednesday, April 4, 2007 12:01pm
Subject: Re: Sizing Icons for links
Thanks, I also looked at the class homepage and under links I found a lot of helpful information. If anyone needs help, there it is. I really like "Brainy Betty".

Message no. 49[Branch from no. 40]
Posted by Hasmik Wilkinson (hasmik.wilkinson) on Wednesday, April 4, 2007 12:17pm
Subject: Re: HasmiK - comment on your student page
Thank you

Message no. 94
Posted by Irina V Baranova (irina.v.baranova) on Sunday, April 8, 2007 8:02pm
Subject: help
I am having trouble with inserting a picture from My Pictures folder. I've typed all of
combinations of file names and paths but it still not displaying anything. Seems like I am missing a step somewhere. I am open for any suggestions.

Thanks

Irina

Message no. 96[Branch from no. 94]
Posted by Prashant Pillalamarri (prashant.pillalamarri) on Sunday, April 8, 2007 11:33pm
Subject: Re: help
1. click on your name under student homepage
2. click on modify/add banner image under customize on your right hand side.
3. click on upload file under banner option and then click continue
4. then click on browse and then select your pic. from your computer
5. once selected, click on continue
6. enjoy your pic. on your webpage

Message no. 125
Posted by Jordan E Massey (jordan.e.massey) on Wednesday, April 11, 2007 1:12pm
Subject: Text editting
I am still having trouble changing the size, font,

color, etc. of my text. With a
background, it makes it hard to read small, black, plain
text. I've noticed that most of you have figured it out.
Any pointers would help? Thanks so much.

Message no. 127[Branch from no. 125]
Posted by Carol Wysocki (BA250CW) on Wednesday, April 11, 2007 1:18pm
Subject: Re: Text editting
Yes, did you find the HTML box that pops up-the font size, etc. is housed in there.

Message no. 134[Branch from no. 127]
Posted by Jordan E Massey (jordan.e.massey) on Wednesday, April 11, 2007 9:18pm
Subject: Re: Text editting
My computer shows the box but when I choose it it gives me an error on the page. Is there certain setting I have to change? Maybe it is my computer. I will try another one.
Thanks!!

Download Close

Syllabus

BA 250 MANAGEMENT INFORMATION SYSTEMS ONLINE

INSTRUCTOR: Carol Wysocki, ABD, CPA, CMA

COURSE DESCRIPTION:

This course is designed to introduce potential business majors to contemporary information systems and demonstrate how these systems are used throughout organizations. The course will focus on the key components of information systems, people, software, hardware, data, telecommunications, and the integration of these components to create a competitive advantage in organizations. Topical coverage consists of the Internet, business data analysis, database management, and the use of business software tools commonly applied in these domains. As a result of taking this course, students will obtain valuable information technology knowledge and skills required for success in business.

CREDITS AND WORKLOAD:

Five quarter credits. This course is an elective in the Accounting Associate two-year applied science degree.

TEXT & MATERIALS:

Required textbooks: Information Systems Today, Jessup, Valacich Prentice-Hall 2nd edition, and Microsoft Office 2003: Essentials Course

Students must have access to a computer that 1) meets the minimum requirements specified below, and b) has Microsoft Office Professional including Word, PowerPoint, Excel, and Access.

- ●Operating Systems: Windows XP.
- ● Hardware: Pentium II or higher, 300 Mhz processor or higher, and an Internet Connection.
- ● A flash, jump drive or memory stick is recommended to save assignments on. Files are not allowed to be saved on the school computers and small disks may not be large enough for the Access and PowerPoint assignments.

TEACHING AND LEARNING METHODS:

This course is taught primarily through discussion with the instructor facilitating the discussions. It is the learner's responsibility to read the materials and synthesize the materials into meaningful discourse. A dialog on the subject is required to thoroughly discuss and explain concepts, formulas, and cases. This is not a lecture class, so prepare for class.

You should check your WebCT mail daily for announcements, reminders, and suggestions. As a learner, it is your responsibility to complete the work in a timely manner and call for help or set an appointment when needed.

OUTCOMES:

Students who graduate from Columbia Basin College will have been exposed to the skills, concepts, and methods of inquiry in many different disciplines. The totality of their learning experience is expressed in a set of general Student Learning Outcomes (SLOs), which all students, regardless of program, are expected to demonstrate:

1. Apply information tools and resources
2. Develop cultural awareness
3. Think critically
4. Communicate effectively
5. Reason quantitatively and symbolically

Upon Successful completion of this course, students should be able to:

1. Understand how and why information systems are used today.
2. Explain the technology, people, and organizational components of information systems.
3. Describe the various types of information systems.
4. Formulate a business case for new information systems, including estimation of both costs and benefits.
5. Explain how businesses are using information systems for competitive advantage vs. competitive necessity.
6. Understand the systems development life cycle and the different systems development methodologies.
7. Describe the different levels of organizational support provided by information systems.
8. Discuss how ethical issues impact how information systems are used.
9. Be able to build, populate, and use spreadsheets and databases to make business decisions.
10. Create, display and communicate content using word processors, presentation software, and electronic communications programs.
11. Conduct research using library databases and Internet resources.
12. Understand how business office applications are used and demonstrate working knowledge of the following types of applications:
    - Word Processing with Microsoft Word.
    - Business Presentations with Microsoft PowerPoint.
    - Spreadsheets with Microsoft Excel.

- Databases with Microsoft Access.
- Student homepages in WebCT.

ASSESSMENT:

Assessment is comprised of exams, software deliverables, and discussions.

Exams: see the calendar for dates.

100 Exam 1 covering chapters 1, 2, 3

100 Exam 2 covering chapters 4, 5, 6

100 Exam 3 covering chapters 7, 8, 9

The purpose of the exams is to test the conceptual and application of the material. The three exam format is 50 multiple choice questions that are set for 65 minutes. You may utilize your book. The exams should automatically grade, if not then email me.The optional comprehensive exam can be substituted for an exam-the better grade of the exams. The three exams are multiple choice.

Software deliverables: see the calendar for dates.

All assignments are individual assignments, except Access can be a group of three maximum. Late assignments will be docked at the rate of 10% per week. The instructor may elect not to take very late assignments.

20 Student Homepage in WebCT (Required a background, a picture, a link, and text about yourself-5 points each).

120 (40 each for PowerPoint, Access, and Excel)

60 Word

Software	200
Exams	300
Discussions	100
Total points	600

A 95% is a 4.0, 94% 3.9 and so forth.

Discussions

A total of 100 points are allocated to ten discussions. All discussion opening and closing dates will be listed on the calendar. The purpose of the discussions is to cover the chapter material. For full credit (10 points), a previous question should be answered and a new

question should be posted. When the instructor starts the discussion, only answer the question once and continue the discussion. The goal is to cover all of the chapter material in the discussions, with reflective thought and to use it when reviewing for the exams.

Word and PowerPoint Deliverables:

Project Purpose and background:

The purpose of this project is to incorporate a new business project into Word, PowerPoint, and Excel. It's time to start your own, or adapt a business, to an Internet-based business including hardware and software (Internet connections, web pages, domain name.) This is your sole source of income, so it's crucial for this venture to be a success. In calculating your grade, writing, spelling, and organizational skills are considered in addition to the content.

PowerPoint (40 points)

Ten to twelve PowerPoint slides should be prepared and posted in the discussion area to show case your business. A suggested format is large font with a few lines and insertion of a digital picture or clip art to make the presentation fun. A themed or colored background should chosen and be consistent throughout the presentation. For example, a wedding themed business should incorporate an appropriate background. The slides should start with the business name, your name, the location, the number of employees, the mission statement and other pertinent information (1-3 slides). The next several slides should describe the service or product offered including the retail price. Two or three slides should be dedicated to the incorporation of technology into the business i.e. laptop, PDA, Internet service, and include a wish list of current technologies and a budget. Concepts and information, from the text, should be included as applicable in the

PowerPoint and Word documents. The last slide should be a conclusion or wrap-up slide. The slides should be posted in the appropriate discussion for all students to read and critique.

Word using the PowerPoint components (60 points).

Formatting and paper length: One inch margins all around, font: Arial, 12 point, double-spacing with page numbers at the bottom right hand of the text. The text of your paper should be a minimum 4 full pages and a maximum of 5 full pages**.** Documentation should immediately follow the text of the paper (i.e., part of the same Word document) and does not count toward the total length of the paper. Provide documentation (references, links, and other documentation) that (1) justifies the feasibility of your business idea and (2) demonstrates that you are using current and appropriate technology in your business. You may utilize Web sites from the Discussion-Websites area as part of your references. There should be a total of five or more references to support this deliverable. A hard copy of the Word document should be submitted for grading if you want it back for your WSU writing portfolio along with the professor signoff sheet. Use the grading rubric as a guide for the organization of your paper. The purpose of this paper is to explain your PowerPoint slides in words and incorporate a basic understanding of Information Systems terminology and applications. Thus, this deliverable is the most comprehensive assignment.

Grading Rubric for the Word assignment

1. Create a company name and describe in detail your business idea, service-based, manufacturing, and why you believe that it will succeed utilizing the Internet. (10 points).

2. What technical infrastructure will you need to run your business? What type of computer, software, hardware, peripherals, network, and ISP connections do you plan to utilize and why? (20 points)

3. How does technology give you a competitive advantage over traditional competitors? If other online businesses started with a similar idea, what will you do to maintain a competitive advantage? (10 points).

4. How will you market your product or service? Web-hosting domain name, shopping cart technology. (5 points).

5. References (5 points).

6. Organization, writing skills, and concept (10 points).

Excel Deliverable (40 points): There are three assignments from the Microsoft text;

1) Assessments 16.1 & 16.2 on pages 501-502,

2) Task 7 Word/Excel Hands on 25.7 page 747, and

3) Task 4 Excel/Hands on 25.5 page 742 Create a Budget Workbook and modify it to your business with a current date. Please email them as three attachments in one document for grading. Don't send the Helping Hands assignment, instead modify this assignment to your business.

Access Deliverable (40 points): This assignment requires creating a database from start to finish including the basic components of

1) tables,

2) queries,

3) forms, and

4) reports.

Creating a database starts on page 552 of the Microsoft text. There is your choice of data base assignments: Classic Cars database page 647 or Pinnacle Pet care page 593.