

The Relationship Among Course Design, Sense of Community, and Adult  
Achievement in Web-Based Courses

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THESIS

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I dedicate this doctoral thesis to my husband, Patrick Herard, without whom it would not have been completed.

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## **SUMMARY**

The study sought to answer the question, what are the relationships among online course design, sense of community, and adult achievement in web-based courses?

Using a cross-sectional survey design, data were collected over a one-year period from graduate business students enrolled in online courses at a not-for-profit university in the Midwest. Information on participants' entry characteristics, perceptions of the course design, sense of community, participation level, and final course grade were collected.

The results from correlation and regression analyses showed that although course design had a significant positive relationship with sense of community it was not the only predictor of sense of community for this group of participants. The results also showed that the best predictors of the final course grades for the participants were gender and marital status.

## **Chapter I**

### **Online Education and Adult Learners**

Online education now plays an integral role in the provision of postsecondary education. As such, it has become increasingly important to understand why some students are successful in the online environment and others are not (Powell, Conway, & Ross, 1990). The National Center for Education Statistics (2008a) reported that 89% of four-year public institutions and 53% of private not-for-profit four-year institutions offer online education. Yet, it is unclear what factors contribute to academic success in web-based courses.

Enrollment in online courses will continue to increase as job market expectations change. The percentage of adult students participating in part-time post-secondary education has risen substantially over the past decade and is projected to increase 19% from 2006 to 2017 (National Center for Educational Statistics, 2008b). More adult students are returning for college level credits to upgrade their skills to meet employers' demands for more highly skilled workers. Individuals with little or no college education cannot successfully compete with their college educated peers because low-skilled and uneducated individuals often do not get opportunities for job and career advancement (Judy & D'Amico, 1997).

Online courses are especially appealing to the adult student population—students age 22 years and older. According to Chyung, Winiiecki, and Fenner (1998), online education, "due to its time and geographic flexibility, has appeals to adult learners who work full-time yet want to seek continuous education" (p. 97). Higher education institutions have responded by using Internet-based technology to deliver courses and programs to address the various needs of the adult learner (Blake, 2000; Lynch, 2001a). However, one of the challenges is ensuring students' academic success with the online instructional model.

## **Statement of the Problem**

Higher education is using Internet-based technology to capture the dynamic elements found in the traditional classroom model while preserving the conveniences of online learning (Blake, 2000; Lynch, 2001a). For example, online courses make use of interactive communication tools (e.g., threaded discussion forums, blogs, wiki) as a way to (1) bridge the gap between the online learning experiences and the face-to-face experiences, and (2) create classroom community (Blake, 2000; Lynch, 2001b; Rovai, 2001). However, few empirical studies have offered a comprehensive perspective on the effects of these efforts on the academic achievement of online learners.

The interactive tools used in online courses are thought to support online interactions among learners and faculty. Through these interactions, according to Palloff and Pratt (1999), learners may experience a sense of community which allows them to become active participants in the learning process. Interaction has been identified as one of the factors that contributes to positive learner outcomes in the traditional learning environment (Kuh & Hu, 2001; Pascarella, Terenzini, & Hibel, 1978; Tinto, 1993). Much of the learning that occurs online is through interactions and collaboration with others (Benigno & Trentin, 2000; Harasim, 1996). Participation in the learning process is thought to be important for success in any learning environment. However, there is little empirical evidence linking participation to academic achievement in online courses.

The literature also suggests that a sense of community is important in online learning in that it helps "retain learners" (Rovai, 2002, p. 199). Through the general sense of connection and social bonds that develop among members, community is thought to promote "socioeffective and cognitive benefits for the learning process" (Palloff & Pratt, 1999, p. 30). However, little

empirical research has examined the relationship between sense of community and achievement, or the relationships among participation, sense of community, and achievement.

The literature also points to interactions as one of the structural features of online courses that may promote a sense of community in a course and proposes that interaction is a critical element of a well-designed course (Conrad, 2005; Coomey & Stephenson, 2001). A well-designed course is thought to promote learning and improve academic performance (Coomey & Stephenson, 2001). However, few empirical research studies have analyzed this relationship. Understanding the relationship between online course design and adult achievement is important because achievement has broad implications for student persistence. Many studies have found a significant correlation between grade point average and persistence (Cejda & Rewey, 1998; Steward & Jackson, 1990). Student persistence is of interest to colleges and universities because of its social and economic implications.

From an economic perspective, many institutions are tuition-driven. Therefore, for each student who drops out before completing a program, the institution loses a viable source of revenue and incurs the additional cost of monitoring and processing these activities (Hossler & Bean, 1990). From both a social and economic perspective, a college education has become the minimum requirement for many entry-level positions. Beyond earning a college degree, graduates are expected to have specific skills required for a changing society (Rendon and Hope, 1996), albeit evidence of acquired skill is often limited to students' grades and/or their cumulative grade point averages. Given this new reality, higher education has become of greater interest to the adult population in recent years.

Ross-Gordon (1998) suggests that adult education has become more accessible due to computer technology and that computer technology is the driving force behind the rise in the

number of adults participating in continuing education. The Internet offers the requisite flexibility most adult learners seek (Chyung et al., 1998; Tait & Mills, 1999; Thompson, 1998). They perceive computers as ideal tools to enhance self-esteem because they allow for private feedback and a less intimidating learning environment (Chyung et al., 1998). Successful online learners are typically non-traditional aged students. However, the research on success factors in online education does not offer a comprehensive understanding of the adult learner's academic achievement in the online environment. Recent research on adult achievement has primarily focused on the relationships among learners' demographic variables and achievement (Wojciechowski & Palmer, 2005; Yukselturk & Bulut, 2007 ). Little is known about how various learner characteristics interact with course design elements to affect achievement.

Given that adult learners continue to pursue online options to achieve their learning goals, higher education would benefit from insight into the effects of online course design and learners' entry characteristics on academic achievement as well as insight into the relationships among course design, sense of community, and academic achievement in online courses.

### **Rationale for the Study**

Online education has become a major growth segment in the higher education industry (Martz, Reddy, & Sangermano, 2004). Many students now have the opportunity to enroll in post-secondary education courses due to advanced educational technology. According to the Illinois Virtual Campus (2009), Illinois colleges and universities offered 7,232 online course sections during the 2009 summer term. These sections enrolled 173,950 students, a 16% increase from the online enrollment reported one year earlier. The growth in online education enrollment has increased the need to identify and study the factors that affect student achievement in the online delivery format.

College and university administrators and faculty can benefit from insight into how to effectively design online courses to ensure that adult learners successfully achieve the learning outcomes of their courses. However, the idea is not necessarily to duplicate the classroom experience. The idea is to take full advantage of web-based technology, such as simulations and discussion boards, to engage the learner and enhance the learning experience. In general, though, online learners want a meaningful experience with detailed and structured courses and diversified course content (Schwitzer, Ancis, & Brown, 2001). They also want access to faculty and peer interactivity.

There are a variety of online delivery formats; among them are web-facilitated courses, fully online courses, and hybrid/blended courses. The web-facilitated course makes use of a course management software to publish course syllabus, assignments, and other documents. However, the course is primarily face-to-face. The hybrid course, also referred to as blended, is one where 30-79% of the content is delivered online (Allen, Seaman, and Garrett, 2007). This format tends to combine both face-to-face and online learning methods in an effort to provide students the benefits of both delivery styles. A fully online course is one where more than 79% of the course is delivered online (Allen et al., 2007). Allen et al. indicated that small, private, and non-profit institutions tend to prefer the blended model over the fully online model.

The format of interest in this study was the hybrid/blended format because it offers ample opportunities for engagement and interactions among faculty and students. Dziuban, Hartman and Moskal (2004) reported that the blended model "combines the effectiveness and socialization opportunities of the classroom with the technologically enhanced active learning possibilities of the online environment" (p. 10). There is anecdotal evidence to suggest that offering students more choices in terms of how content is delivered may be more effective than

having a fully online class (Singh, 2003). Presenting materials in various formats also help to maximize student engagement. Faculty have reported an increase level of interaction among classmates and instructors because the blended environment offers a less intimidating forum for students to participate and consequently creates a more inclusive learning environment (Gould, 2003). Blended courses "offer the convenience of a fully online course without the loss of faculty or student interaction" (Sitter, Carter, Mahan, Massello, and Carter, 2009, p. 42). Kibby (2007) suggests that the preferred learning styles of more students are being met and participation is maximized when one combines the successful elements of a well-designed course along with face-to-face discussions and the personal interactions of a blended course.

This study focused primarily on adult students enrolled in blended/hybrid graduate business courses. Business students were selected for three reasons: (1) institutions offering online courses generally do so in the fields of business administration, education, and humanities, (2) business schools seem to offer blended courses at a higher rate than fully online courses (Allen, Seaman, & Garrett, 2007), and (3) no one has studied business student achievement in web-based courses. A report published in 1999 by the National Center for Education Statistics noted that 55% of the institutions offering for-credit online education courses did so in the field of businesses and management (Lewis, Snow, Farris, & Levin, 1999). In addition, a recent report published by the U.S. Department of Education (2011) on online learning found that in 2007–2008, the highest percentage of post-baccalaureate students taking their entire program through online education was in the field of business. Furthermore, it appears, no empirical study has tried to link course design and sense of community with the course achievement of adult business students. This study placed emphasis on the social

measure of online course success by examining the relationships among (1) online course design, (2) sense of community, and (3) achievement of adult students.

### **Research Questions**

The overarching question guiding my inquiry was: What are the relationships among course design, sense of community, and adult achievement in web-based courses? In addition to this general question, I collected evidence to help me answer the following subsequent questions:

1. What is the direct relationship between course design and achievement?
2. What is the relationship between course design and sense of community?
3. What is the indirect relationship between course design and achievement, where sense of community and participation are the intervening variables?
4. What is the relationship between entry characteristics and sense of community?
5. What is the relationship between entry characteristics and achievement?

### **Definition of Terms**

*Achievement* - Final course grade

*Community* - Researchers define community in different ways. However, Conrad's (2005) definition best summarizes the general theme of what community represents.

Conrad defines community as “ a general sense of connection, belonging, and comfort that develop over time among members of a group who share purpose or commitment to a common goal” (p. 2).

*Course Design* – The overall structural dimensions of the course (Coomey and Stephenson, 2001).

*Entry Characteristics* - Individual variables depicting demographics, family and employment status, and educational background (Kember 1995).

*Sense of Community* – The extent to which students exhibit a sense of connection and learning resulting from various forms of interactions embedded in the course design (Rovai, 2002).

### **Study Framework**

The theoretical framework for this study was an adaptation of Kember's (1995) model of Student Progress as revised by Houle (2004). These models are shown in Appendix A, Figures A1 and A2. Drawing on this framework, I proposed several hypothesized relationships which I examined to answer my central and subsequent questions. Appendix A, Figure A3, offers a visual depiction of the hypothesized relationships.

I proposed that a student's achievement in an online course stems, directly or indirectly, from four factors: (1) course design, (2) entry characteristics, (3) sense of community, and (4) participation. Two exogenous factors in the proposed model were course design and entry characteristics. Both of these factors were proposed to have a direct positive effect on sense of community and an indirect positive effect on participation. The model also proposed a reciprocal direct positive relationship between students' sense of community and their level of participation.

These hypothesis were informed by the literature on adult learners which suggests that a sense of belonging to a group or an institution is important for adult learners and they enjoy interacting with classmates on course related matters (Dorn, Papalewis, & Brown, 1995; Kerka, 1989). Consequently, in this study, students assessed the degree to which various online interactions were implemented in the course and the extent to which those interactions promoted a sense of community (Coomey & Stephenson, 2001; Moore 1989). A sense of community in an

online environment is thought to promote greater interaction and participation among learners and it is through these interactions that learning occurs (Vygotsky, 1978; Wenger, 1998).

All of the courses examined in this study were blended in nature. In addition to the online component, the courses had three face-to-face sessions during the quarter. Several researchers have found great value in blending online learning with a certain number of face-to-face meetings. According to Rovai and Jordan (2004), students experience a greater sense of community in blended courses than they do in fully online courses. Although this study did not compare the different models of online courses (fully online vs. blended), the extent to which elements of the course design can foster a sense of community was of interest.

Lastly, recognizing the possibility that students may experience community outside of the course, the study also sought to uncover the relationships among various exogenous factors (real vs. expected experience, motivation, and belonging), sense of community, and participation. The exogenous factors were identified through a review of the literature (Bell, 2007; Morris & Finnegan, 2005). Bell (2007) found that students' learning expectations for the online environment were key indicators of their achievement. His study also suggested that reasons for taking a course online are also an important element for student achievement. When students' expectations align with course expectations, students will become more engaged and exhibit behaviors consistent with success. The literature also indicated that students who identify with their institution, or feel valued and respected, are more engaged in the learning process (Goodenow & Grady, 1993). Each of the exogenous factors represents an external source for students to develop a sense of community that may lead subsequently to successful academic achievement.

## **Significance of Study**

The issue of adult achievement in online courses matters because online education has become an enrollment driver and, therefore, a revenue source for colleges and universities. Online education offers an opportunity to those seeking additional training and education to advance in their careers. Data on graduate students' experiences with online course designs may be applicable to other graduate programs. This study will not only add to the general literature on web-based adult learners, but also to the literature on course design. As noted earlier, there are few empirical studies that analyze the effects of course design elements on achievement. This study will also provide some insight into how the course design affects students' sense of community in the online environment and the value of sense of community for students' achievement. This information can be useful to business schools offering online courses by providing insights into what types of online course interactions are important for student achievement.

In summary, although adult learners may benefit from the time and geographic flexibility of online education, they seek many of the same elements found in the traditional learning environment such as faculty and peer interactivity, and a meaningful experience with detailed, structured, and diversified course content (Schwitzer et al., 2001). Colleges and universities are making use of interactive communication tools to meet the modern demands for online instruction, however, they are challenged in their efforts to design effective courses to ensure student success (Fozdar & Kumar, 2007). Little is known about the relationship between online course design and academic achievement in adult distance education. Although research has been conducted comparing achievement in the online model to achievement in the traditional (face-to-face) model of instructional delivery, little research has been done to identify the

specific factors that contribute to the academic success of adults in online courses. As a result of the social and economic implications for students and educational institutions, it is necessary that much more attention be directed towards studying and identifying the factors that result in student success in the online format. The next chapter examines relevant literature on adult learners, distance learning, online community, and persistence so as to generate insight into factors that may result in academic success for the web-based adult learner.

## **Chapter II**

### **Literature Review**

This chapter begins with the literature describing adult learners and the reasons they pursue higher learning. The discussion includes a summary of the challenges adult learners face as they pursue their educational goals and offers insights into why distance learning is an appealing option. The chapter continues with an overview of distance education and learners' expectations of the online environment. One could assume when learners' expectations are addressed in the online environment, the probability of success in the course would increase. However, this assumption has not been supported empirically since few studies have tried to link course design specifically to academic achievement. The literature on success factors for adult web-based learners is fragmented. Research in this area has focused on either individual factors or individual categories of factors (i.e., demographic variables) and many studies are anecdotal accounts. For example, the literature on success factors has centered around four areas (learner characteristics, course design, sense of community, and participation), each of which is presented in this chapter.

The literature on web-based learners describes the characteristics of a successful online learner. A few of those characteristics have been shown empirically to affect the academic achievement of adult web-based learners. The course design literature highlights the fundamental elements of a well-designed online course, many of which are grounded in the literature on adult web-based learners and their expectations. One key element echoed throughout this literature is interaction. This chapter distinguishes varied forms of interactions embedded in an online course and describes how web-based tools, when applied properly, can provide a base for building engagement or fostering interactions. Although technology can lay the foundation for engagement online, the literature offers conflicting evidence of the efficacy of

engagement on academic achievement. It suggests that engagement in terms of interactions could promote a sense of community among learners: however, there is little empirical evidence to support this claim.

The literature highlights the importance of community in the online environment, primarily because a sense of community is thought to enhance learners' satisfaction and promote learning. But there is little empirical evidence of its effect on academic achievement. Little is known about how course design relates to sense of community and how it relates directly or indirectly to the adult web-based learner's academic achievement. This literature review points to the need to better understand these relationships.

In some respects, success in higher education is defined as completion of a course or program. As such, much has been written in the area of student retention/persistence. The literature on student persistence, particularly adult student persistence in web-based courses, is important for this study because it is a credible body of literature that identifies an array of variables that is correlated to student success and/or failure in web-based courses or programs. The chapter describes two models from this literature: Kember's (1995) Model of Student Progress and Houle's (2004) Revised Model of Student Progress. Both models identify the grade point average as a key predictor of persistence and both clearly describe variables that affect the adult learner's grade point average in web-based courses. These models account for some of the external challenges the adult learner faces and reflect the impact of those challenges on the learner's academic performance. Houle's version makes the connection between the course design and the final course grade.

## **Adult Learners**

In the past two to three decades, higher education has seen its strongest educational participation from part-time adult students (University Continuing Education Association, 2002). NCES (2009) projects a rise of 19%, between 2006 and 2015, in the enrollment of people 25 years of age and older. This increase in enrollment “represents changing beliefs by adults and our society about the importance of a college credential linked to work stability, financial support, and related job opportunities” (Kasworm, 2003). This is due to a variety of changes in the business environment. Because of globalization, advances in technology, increased competition, and the rise of the information economy, businesses are expecting more from the workforce. As a result, initial professional degrees and certifications are no longer adequate and many adults are returning to school to gain additional skills for continued employment or upward mobility. The reasons for pursuing learning may vary from one individual to another. Some have multiple reasons for learning (Cross, 1981). Regardless of the reasons, many researchers agree that lifelong learning must become an ongoing element in every adult’s lifestyle (Bailey & Mingle, 2003; Digital Economic Opportunity Committee, 2002; Houle, 2004 ).

## **Challenges and Needs**

The journey to lifelong learning is not without its challenges. Adult learners (non-traditional college age students 22 years or older) face many barriers to education. The three main barriers are (1) situational; that is, cost, time, home and job responsibilities and other life situations; (2) institutional; that is, norms, practices, and procedures; and (3) dispositional; that is, beliefs, attitudes, confidence (Cross, 1981; Kember, 1995; Merriam & Caffarella, 1999). These learners often work full-time while attending school, and they are predominantly part-time students with family obligations. In addition, they are self-directed, problem-centered, and use

life experiences as resources for learning (Knowles, 1984). Traditional college courses have challenged adult learners because of their inherent rigidity and their teacher-centered pedagogy. According to Knowles (1984), adult education requires a different framework, one that moves away from teacher-centered pedagogy. The premise of teacher-centered pedagogy places the teacher as a knowledge transmitter and the students serve in a passive role in the process.

Colleges and universities are accommodating adult learners and minimizing these barriers through web-based distance education programs. Adult learners' needs are different from traditional students and "it is these students to whom online distance education is geared" (Palloff & Pratt, 1999, p. 3). Distance education appeals to this group primarily because of the flexibility and control it affords, including the ubiquitous access to courses (Palloff & Pratt, 1999).

### **Distance Learning and Success**

**Distance learning defined.** If distance learning is one option for addressing adult-learners' needs, an examination of what the literature says about this format is warranted. Distance education dates back to 1728 when individuals could learn shorthand by having lessons sent to them weekly (Holmberg, 2000). The modern version of distance education, which evolved from the correspondence schools, has not changed much. The emphasis is still on the individual, whereby the student studies individually and communicates through some medium over some distance with a teacher. What has changed is the sophistication of the medium through which the communication occurs. The consensus regarding distance education is that it separates the learner from the teacher and from the group via individualized learning (Holmberg, 2000). For the purpose of this study, distance education is defined as learning over some distance via the Internet with "quasi-permanent separation of the learner from the teacher and

from the learning group throughout the length of the learning process” (Keegan, 2000, p.23).

There may be some compulsory or voluntary face-to-face contact.

The number of distance education programs has increased in recent years. Between 1995 and 1997, the percentage of 2-year and 4-year degree granting institutions offering distance education courses rose from 33% to 44% (Sikora, 2002). In its most recent survey on distance education course offerings, the National Center for Education Statistics (2008a) reported that in the 2006–2007 academic year, 66% of all 2-year and 4-year institutions offered distance education courses. The number of students taking online courses continues to surpass the overall growth rate of higher education enrollment. According to a report from the Sloan Consortium (Cullen & Sherman, 2010), the annual growth rate of students taking online courses was 19% from fall 2002 to fall 2009, whereas the annual growth rate of student enrollment in higher education, in general, was less than 2% from fall 2002 to fall 2009.

**Success factors.** Although there is evidence the rate of enrollment in web-based courses continues to increase, this is not necessarily indicative of the level of academic success achieved by the adult web-based learner. The literature indicates that distance learners want a meaningful experience, access to faculty, peer interactivity, student services, and a culturally sensitive environment (Kerr, Rynearson, & Kerr, 2006; Schwitzer et al., 2001). They want to feel connected. One could assume that if these elements are present in the online environment, they could translate into academic success for the learner. However, there are other factors identified in the literature that also are key to success in the online environment, a few of which are specific to the individual learner, including learner age, gender, and computer expertise (Hoskins & Hooff, 2005; Kerr et al., 2006; Pituch & Lee, 2006). While the body of knowledge on success factors is extensive, it is unfortunately fragmented in its presentation. Overall, the literature on

success factors in the online environment centers around the following constructs: learner entry characteristics, course design, sense of community, and participation. These factors are often studied in isolation from each other with no clear framework to promote understanding of how they collectively interact to influence the academic achievement of web-based learners. The following is a review of the literature about each construct.

### **Learner Entry Characteristics**

Distance learning requires the learner to be highly self-directed and self-sufficient (Schwitzer et al., 2001). To become engaged distance learners, students must develop a certain level of competency with the technology. The more experienced learners are in using the technology, the greater the chances for success (Pituch & Lee, 2006; Rakap, 2010; Yan, 2006). Lim (2000) found that participation by adult web-based learners was greatly influenced by their computer self-efficacy. However, some studies have found little or no relationship among computer expertise, participation, and success (Rumprapid, 1999). This is an area for further exploration. Gender has also been noted to have an impact on adult learner achievement, and male students tend to outperform female students. This is evident particularly in technology-centered courses (Delialioglu, Cakir, Bichelmeyer, Dennis, & Duffy, 2010). Other researchers have identified successful online students to be non-traditional students (adult learners) who are older than the average student (Kerr et al., 2006; Palloff & Pratt, 1999, Schwitzer et al., 2001). These students are more mature, self-reliant, self-disciplined, see instructors more as facilitators than experts, seek individualized considerations, are intrinsically motivated, possess a more serious attitude toward their courses, and are more anxious and less confident with the traditional academic environment (Kerr et al., 2006; Palloff & Pratt, 1999; Schwitzer et al., 2001). However, there are conflicting data on the relationship between age and academic success in the

online environment. Some studies have shown that age seems to be a powerful predictor of achievement, with the non-traditional older students achieving better grades than the traditional college students (Alstete & Beutell, 2004; Hoskins & Hooff, 2005). In addition, Hoskins and Hooff (2005) reported that the level of participation on discussion boards and the amount of time spent online increases with age. Yet, others have found no significant difference between student age groups, their participation, and their academic performance (Coldwell, Craig, Paterson, & Mustard, 2008).

### **Course Design**

The literature offers suggestions of elements to consider when designing an online course, most of which are based on anecdotal observations. The literature is consistent in emphasizing that a well-designed online course will promote student learning and improve performance. For the purpose of this study, the course designer is the instructor who delivers the course. Collins and Berger (1996) point out that the instructor in the online environment has four roles: (1) pedagogical, (2) social, (3) managerial, and (4) technical (as cited in Palloff & Pratt, 1999). The pedagogical role requires the instructor to be a facilitator. In the social role, the instructor becomes a community builder and helps build and maintain group cohesion. The instructor is also the course administrator and thus the manager. Last, in the technical role, the instructor must use the technology to promote active learning by creating a “double-loop in the learning process” (Palloff & Pratt, 1999, p. 80). Each of these roles is evident in the way the course is designed and delivered. The three key characteristics of a well-designed course that are found in the literature are: (1) it will incorporate the appropriate learning theories; (2) it will promote interactions; and (3) it will properly integrate the current technology available.

**Adult learning theories.** The current state of online course design is such that designers are relying on familiar instructional methods and tools when building online courses. Snyder (2009) states that "there is a need for new instructional-design theories to guide the design of instruction using new technologies and tools that the Internet offers" (p. 48). The literature on course design supports this view. Harvey (2002) contends that online course design lacks a theoretical framework that integrates pedagogical practices and theory with technological capabilities. One of the reasons for this is the challenge of applying often abstract principles and guidelines from various theories into the design of a specific course (Hannafin, Hannafin, Land, & Oliver, 1997; Janicki & Liegle, 2001). Richards, Dooley, and Lindner (2004) suggest that course designers should incorporate adult learning principles into course designs and delivery.

It is important to note that "just as there is no single theory that explains all of human learning, there is no single theory of adult learning" (Merriam & Caffarella, 1999, p. 271). Several of the popular models of adult learning discussed in the literature have not been supported empirically. The most widely known model of adult learning is Knowles' (1970) model of andragogy. The concept of andragogy posits that unlike children, adult learners are self-directing, problem-centered, and use life experiences as resources for learning. They tend to be more motivated and like to know why they are learning something (Cross 1981; Galbo, 1998; Mezirow, 1998).

Context is another factor discussed in the literature that can lead to our understanding of how adults learn (Kiely, Sandmann, & Truluck, 2004). The contextual perspective situates learning in "real life" (Cafferella & Merriam, 2000). Adults learn not from experience but rather through the experience (actually living it). From this perspective, learning becomes an experiential activity and "individuals learn as they participate by interacting with the community

(with its history, assumptions and cultural values, rules, and patterns of relationships), the tools at hand (including objects, technology, languages, and images), and the moment's activity (its purposes, norms, and practical challenges)" (Fenwick, 2000, p. 253). Interactive exercises involving real-life problems and situations engage adult learners. Technology can foster engagement through various web-enabled tools such as video clips analysis, simulations, chatrooms, and so forth. (Hansman, 2001; Kiely et al., 2004).

McClusky's (1963) Theory of Margin assumes that adulthood is a period of continuous growth and change. As a result, adults must learn to preserve much of their available energy for unexpected events. McClusky firmly believed in the notion of balance or margin and defined margin as the relationship between the "load" (of living) and the "power" (to carry the load). The load is "the self and social demands required by a person to maintain a minimal level of autonomy... [Power is] the resources, i.e. [sic] abilities, possessions, position, allies, etc. [sic], which a person can command in coping with load [sic]" (McClusky, 1970, p. 27). Thus, the formula for margin (M) becomes load (L) divided by power (P), or  $M=L/P$ . As power increases in proportion to the load, so does the available margin. McClusky's theory is of value because

[I]t speaks to the everyday events and life transitions that all adults encounter. Although life events and transitions certainly precipitate many (and some would say the most potent) learning experiences, McClusky's model does not directly address learning itself but rather when it is most likely to occur." (Merriam & Caffarella, 1999, p. 282).

The more margin an adult has, the easier it will be to overcome the source(s) of load. Thus, one can assume from McClusky, learning is most likely to occur when adult learners have some margin of power; however, there is little empirical evidence to support this.

Richards, Dooley, and Lindner (2004) suggest that using andragogy principles in online courses will enhance the learning experience. Their recommendations are that the course should (1) be self-directive, (2) make extensive use of applied exercises so the learner can share prior

experiences, (3) use exercises where the learner can apply content to work experiences, (4) use learner-centric teaching methods since adult learners like to learn in the context of real life situations, and (5) take advantage of internal motivators since adult learners are motivated by internal factors such as job satisfaction and quality of life rather than external factors such as higher pay and job advancement. The literature does not provide any empirical evidence on how enhancing the learning experience translates into academic success.

**Online interactions.** Interactions are important to the learning process. However, “lack of interactions has been considered a weakness of distance education” (Lee & Paulus, 2001, p. 245). According to Moore (1989), there are three types of interactions in distance education and these interactions are possible through the effective usage of technology. The three interactions are (1) learner-content interaction, (2) learner-instructor interaction, and (3) learner-learner interaction. Learner-content interaction involves the process the learner engages in to construct knowledge. With this interaction, the learner engages with materials that ultimately change their understanding and attitude. Learner-instructor interaction involves communication between the student and instructor. This interaction is vital in distance education when onsite support is not available. It includes the quality and level of support, guidance, and counsel the instructor provides to aid students in constructing and understanding new content. Learner-learner interaction occurs between a learner and other learners with or without the instructor present.

Given some of the embedded limitations of distance education with respect to student-student interaction, students may feel disconnected from other learners. Supportive peer relationships promote positive self-esteem, allow for shared life experiences, and are an avenue for sharing information, getting feedback, and obtaining advice. Through these relationships, distance students may better cope with the academic and institutional challenges. Both cognitive

and social interactions are important within learner-learner interactions (Schwitzer et al., 2001). There is great debate and misunderstanding about educational media for distance education (Moore, 1989). By articulating and defining these three interactions, Moore argued, it will become clear how properly employed multimedia can enhance course design.

**Web-based tools and engagement.** The Internet has provided access to varied online tools to support learning. Some of the tools that have received attention are Web 2.0 tools such as wikis, blogs, social networking sites, and really simple syndication (RSS), all of which by nature support interaction and collaboration among a network of individuals. Web 2.0, often referred to as the interactive Web, allows the Web to become a platform whereby users can create, share, and interact with content in dynamic ways (O'Reilly, 2005). These easy-to-use tools have made a large impact on the social dynamics of the course. They have not only fostered interaction amongst students in peer-to-peer relationships, they have also allowed students and teachers to connect beyond the classroom (Lee, Miller, & Newnham, 2008; Yan, 2007). The concept of "connectivism" (Siemens, 2005) emerges in the literature as a possible new educational theory that aligns well with the current social, interconnected, community-based learning landscape these tools support.

**Web-based tools usage.** The opportunities for engagement are present. Some researchers have concluded that the use of multiple technologies or tools is crucial in delivering a successful online course (Martz & Reddy, 2005; Pituch & Lee, 2006; Soong, Chan, Chua, & Loh, 2001). However, it is unclear whether or not educators are adequately utilizing the tools. For example, educators who teach online may select a particular tool (e.g., threaded discussion forum, blog, wiki) because it is available to them or use an instructional method (e.g., lecture, discussion, cooperative groups) because it is the method with which they are most familiar;

however, they may not have a clear understanding of how the tool or method supports a particular type of content or instruction. They may also not understand how to use the tools to support interaction. For example, the literature suggests that interaction and engagement with the tools should be bi-directional and primarily student-driven rather than instructor-driven (Dohn, 2009). However, it appears that much of the interaction is one-directional when the instructor authors most of the content and then makes it available. This approach counters the perception that students use the tools to engage in “collaborative knowledge construction” (Land & Bayne 2008, p. 679). In stating the obvious, much planning and consideration is needed when implementing technology in the online learning environment (Soong et al., 2001).

**Engagement and learning.** Although the technology allows for engagement, it is not clear what the learning implications are. Research by Brown and Bussert (2007) found that students enrolled in an information literacy course that used a social software site were more engaged than the students in the course section that did not use the social software site. However, there were no significant differences in learning between the two groups. Also, a few studies have reported that educators often times assign greater weight to the act of participation rather than to the quality of content engagement. This is often a calculated effort by educators to promote free-flowing exchanges among students. Thus, it becomes unclear as to how the technology and its usage affects learning (Ducata & Lomacka, 2008; Farmer, Yue, & Brooks, 2008; Singer, 2008).

If used effectively in the instructional design of course material, media may have a direct impact on learning effectiveness (Carter 1996; Jonassen, 1988). As new technologies emerge, educators need guidance on how to use these technologies to enhance teaching and learning. From Palloff and Pratt’s (1999) perspective, learning occurs not because of the technology, but

because the instructor infuses the technology in delivering the content. The literature suggests it is possible to provide an engaging learning environment on-line (Palloff & Pratt, 1999; Yan, 2007). Web-based technology has the potential to enhance students' cognitive and social experiences and to build online communities (Land & Bayne, 2008; Lee et al., 2008; Palloff & Pratt, 1999; Siemens, 2005).

### **Online Learning Communities**

Using technology to build classroom community has received great attention in the distance education literature. Community is important in the electronic classroom because forging social bonds is thought to promote “socioeffective and cognitive benefits for the learning process” (Palloff & Pratt, 1999, p. 30). A theme across the literature on community building in distance education is to increase interpersonal opportunities for distance education students. Online communities can help these students feel more connected to their professors and classmates. According to Shea, Li, and Pickett (2006), “good learning environments are learner-centered, knowledge-centered, assessment-centered and community-centered” (p. 176). Although most of the studies in this area are either anecdotal in nature or have small sample size, they all make an argument about the online student's need for support, control and engagement as well as the instructor's role in building such an environment.

**Community defined.** Conrad (2005) defines community as “a general sense of connection, belonging, and comfort that develop over time among members of a group who share purpose or commitment to a common goal” (p.2). Building community in online courses is important because, as the argument goes, it is a “sense of community that attracts and retains learners” (Rovai, 2002, p.199). Today's online communities are not place-based (Palloff & Pratt, 1999). Involvement in communities today is a conscious decision of its members. Wenger

(1998) argues that a true community is one where its participants engage in the practice of mutual engagement, negotiation of a joint enterprise, and development of a shared repertoire.

These practices are a source of community coherence. Community is also defined as

[A] dynamic whole that emerges when a group of people share common practices, are interdependent, make decisions jointly, identify themselves with something larger than the sum of their individual relationships, and make a long-term commitment to well-being (their own, one another's and the group's). (Palloff & Pratt, 1999, p. 25–26)

Palloff and Pratt (1999) state that the process of community development is similar to the stages of group development. Online communities lend themselves to greater conflict due to the “absence of verbal, facial, and body cues and to difficulty in expressing emotion in a textual medium” (p. 26). Conrad (2005) points out that at the beginning of a course, students are engaged in forming and norming activities. It is during this early stage that instructor and administrator support becomes critical.

**Course design and community.** Conrad (2005) raises an important question regarding who is responsible for building community in an online environment. The literature is unclear about the answer. Some believe the course designer must build community, but others say the learners must take ownership of the task. In their review of the literature on web-based learning, Coomey and Stephenson (2001) identified four major features of online courses that promote a sense of community in a course. These features are: (1) dialogue, (2) involvement, (3) support, and (4) control. The instructor may use synchronous chats, discussions, asynchronous bulletin boards, and e-mails to engage, guide, and maintain students in online dialogue. A course with carefully structured dialog is more than likely to be successful (Coomey & Stephenson, 2001). Both students and instructor must demonstrate a level of involvement with the course.

For the instructor, involvement can occur in the form of providing timely responses to tasks and giving attention to students needs. The instructor may also promote student

involvement with interactive course content and collaborative learning activities. Online students may need ongoing support in the form of frequent feedback from the teacher, other students, and technical experts. Students especially value personalized feedback that addresses their individual work (Whiteman, 2002). Last, online learners need control over learning activities and want encouragement to exert that control (Lee & Paulus, 2001). Control can come in the form of freedom to set their own personal goals, to monitor their progress, and/or to structure their responses to exercises. Lee and Paulus (2001) recommend that students be allowed to choose which group activities and the number of activities they wish to participate in.

These levels of engagement are consistent with what the literature defines as a constructive learning environment. A constructive learning environment is one where learners are empowered in the learning process. Learners direct their learning by using various tools and information resources to collaborate and support one another to meet learning goals and complete problem-solving activities (Wilson, 1996). However, the learner-centered approach assumes the learner is prepared to accept the responsibility. Oliver (1998) cautions that there are students who “feel that they learn by being taught and when this aspect is removed from an instructional setting and the onus is placed on the student there may be some who will not appreciate the different teaching style despite its more effective learning potential” (p. 147).

**Building a sense of community.** Valasek (2001) recommends that online instructors develop a sense of community, closely monitor students’ progress, provide timely and frequent feedback to students, and arrange face-to-face meetings with students because students respond well to personal contacts with instructors. Conrad (2005) conducted a multi-year study of online graduate students aimed at exploring learners’ perceptions of community and how they went about developing a sense of community. Some of his findings were that community building lies

with several agents (the learner, faculty, administrators, family, and employers), and that offering students an opportunity to meet face-to-face at some point in the course allows students to connect with fellow classmates and leads to more satisfaction with the course design.

From this perspective, Martyn (2003) recommends a “Hybrid Online Model”. She describes the Hybrid Online Model as a combination of instructional technology with face-to-face student and instructor interaction. This model is synonymous with concepts of “blended learning” discussed by Driscoll (2002). The hybrid model consists of two face-to-face interactions between student and instructor. The first interaction occurs in the first class as part of orientation and the second interaction in the last class to bring closure. All other interactions are online. The online interactions are mediated by online tools such as synchronous chat, e-mail, and asynchronous threaded discussion tools. The online interactions were between instructor–student and student-peer.

According to Martyn (2003), the first class created a sense of community for the students. Students are not only introduced to the course and the technology, but they also have the opportunity to socialize with their classmates. The students have an opportunity for hands-on experiences with the course management system by working through activities, exercises, mock exams, participating in a chat, creating a threaded discussion, and sending e-mails to each other. According to Martyn (2003), this sense of community resulted in a 100% completion rate of the hybrid online courses. It is not clear how Martyn defined “sense of community.” It does not appear that she had a valid instrument to accurately measure this construct and she did not survey the students.

The literature suggests that sense of community is important to online learning because it can help reduce feelings of isolation, promote learning and student motivation, and provide a

social context through which learning can occur (Ertmer & Stepich, 2004; Palloff & Pratt, 1999; Tinto, 1993; Wilson, 1996). Individuals would experience this sense of community when members have “a sense of belonging and believe that active participation in the community will satisfy their needs” (Rovai 2002, p. 199).

**Community participation and learning.** Participation “combines doing, talking, thinking, feeling and belonging” (Wenger, 1998, p. 56). In online education, it is important for learners to become active in the learning process. They create knowledge and meaning through interactions and exploration. This reflects theories related to the social construction of knowledge. Social learning theorists, such as Vygotsky (1978), contend that social interaction is an important element in the online environment. The literature also indicates that collaborative learning is important for success in the online environment. It is through those interactions with others that learning occurs (Benigno & Trentin, 2000; Harasim, 1996). As such, researchers have found a positive relationship between various levels of interactions (student-student and student-instructor) and learning within the online environment (Jiang & Ting, 1999; Lapointe & Gunawardena, 2004). One study that examined the relationship between participation and academic achievement found a strong positive relationship between online course participation and student academic performance, particularly in courses where students were expected to participate regularly (Coldwell et al., 2008). The same study also found gender differences in participation levels; female students posted more discussion messages and had higher grades than male students. The gender differences in participation are echoed throughout the literature where male students consistently have lower participation patterns than women (Arbaugh, 2000; Gunn, McSparran, Macleod, & French, 2003). However, lower participation levels do not always equate to lower grades. This further complicates one's understanding of the relationship

between participation and academic performance. It is unclear how the participation was assessed since high discussion board postings do not necessarily signify learning.

**Instructor's role.** In the online environment, the instructor acts as facilitator, while students construct their knowledge and meaning through interactions with “communities of learners” (Palloff & Pratt, 1999, p. 16). Through his or her facilitative role, the instructor uses collaborative assignments and develops critical thinking and research skills to support the active learning process. Odin's (2002) study on the teaching and learning activities in the online classroom revealed that the instructor's role online is more than facilitation. The instructor's role is also to create a learning environment where students can critically explore course content. The instructor can accomplish this through various instructional activities that require students to apply concepts to real life situations and that are accompanied by teaching notes, discussion questions, commentaries, and discussion responses. These active interactions can ultimately create a teaching presence valued by online learners. According to Odin (2002), a teacher's presence “promotes self-motivation and self-direction amongst students as they are guided to actively engage in collaborative learning activities” (p. 6). Although Odin's study provides a glimpse of how instructors can better engage their students through their direct and indirect teaching acts, it does not offer evidence regarding students' perceptions of teacher presence and the value of such presence. It would have been a more informative study had Odin surveyed students in addition to studying the various courses. Such a study might have revealed that in addition to teacher's presence, a sense of community is also important for e-learners.

### **Community Beyond the Course**

An argument this study will explore is the possibility that learners may experience community outside of the course, which in turn may supplement for the lack of community in the

course. This was evident in Brown's (2001) study on building online community for distance learners. Her study identified three levels of community building: (1) making online acquaintance, (2) community conferment, and (3) camaraderie. The first level of community building placed emphasis on the individual in that students would gravitate toward those who share similar characteristics, such as interests and academic background. The second level placed emphasis on the course and interactions within the course, such as active participation in threaded discussions. The third level of community looked beyond the individual characteristics and the course. This level of community is attained when members are connected beyond the class, such as having other courses together, communicating outside of the discussion board, or socializing outside of class. Camaraderie is the highest level of community and allows for a greater degree of engagement in the course. This finding suggests that students may experience community outside the course.

Community can stem not only from interactions with classmates but also with other members of the institution, such as faculty, advisors, and student services personnel. Studies have shown that students who have positive experiences with members of the institution and identify with the institution tend to be more engaged and connected (Kember, 1995; Tinto, 1993; Wyatt, 2011). Other elements outside the course that may affect students' sense of community were discussed earlier in this chapter. For example, students with realistic expectations about online courses may become more satisfied when those expectations are realized and will find themselves more drawn to others in the course (Goodenow & Grady, 1993; Valasek, 2001). Also, students' motivations for enrolling in the course may be another important element that affects the level at which they want to engage in the course. The same motivation may also be an important element for academic achievement (Bell, 2007).

The literature reviewed thus far indicates that several factors impact the adult learner's achievement in the online environment, although most studies focus on either one or a limited number of factors. The literature contains few theoretical frameworks that consider together multiple determinants of achievement for the adult web-based learner and that explore reciprocal influences among and/or between factors that may affect overall success. Models that come closest to providing a glimpse of how varied factors, identified in the literature, may interact to affect the adult learner's achievement in the online environment are from the adult persistence literature. These comprehensive models point to key indicators of academic achievement for the adult online learner.

### **Adult Persistence in Internet-Based Distance Courses**

The literature on student persistence is vast and comprehensive. This literature, specifically the literature that focuses on adult persistence in web-based courses, is relevant for this study because it also points to key indicators of academic achievement. The leading model in this literature is Kember's (1995) Model of Student Progress. Although this is a persistence model, it identifies two constructs having a direct impact on academic achievement as measured by the grade point average (GPA). This comprehensive model also accounts for some of the external challenges the adult learner faces and reflects the impact of those challenges on the learner's academic performance. It does a good job of proposing factors that are critical for the adult learner's success in web-based courses. A large portion of that success stems from the learner's social and academic integration in the institution. The following is a description of the model, which was later revised by Houle (2004). This revised model becomes the conceptual framework for this study.

Kember's (1995) Model of Student Progress is the only model that focuses on persistence of adult students taking courses online (Houle, 2004). A few studies have looked at persistence of adult learners in online courses. For example, in his study, Valasek (2001) sought to identify common characteristics of students who persist in online courses and to construct a profile of students most likely to complete online courses successfully. He identified a series of indicators of student persistence and success in online courses. According to Valasek, successful online students (1) have realistic expectations of the amount time online classes demand, (2) can better balance work-home-school demands, (3) feel confident about using a computer, (4) keep up with course requirements by logging in frequently, (5) actively participate in online discussions, and (6) are nontraditional students (age 30 and older).

Other studies have found similar characteristics among persisting students (Campbell, 1996; Moore & Kreasley, 1996; Mylona, 1998). Although some studies suggest that these characteristics may increase the probability of student success, other studies have found no such relationship (Huston, 1997; Kember, 1995; Loomis, 2000; Mylona, 1998). Distance learners have a general tendency to drop out because distance education seems to develop "a weak integration of students into institutions" (Mylona, 1998, p. 50). The literature also suggests that some process factors may affect retention, such as institutional support and interaction (Mylona, 1998), course or program satisfaction (Chyung et al., 1998; Mylona, 1998), intrinsic motivation (Campbell, 1996; Fjortoft, 1996), extrinsic goals and grade point average (Campbell, 1996). Kennedy (1999) cited a study conducted by Fjortoft (1996) which found that "perceived intrinsic benefits of obtaining a degree, such as learning to perform their job better, or access to recent developments in their discipline, was a good predictor of persistence, while perceived extrinsic benefits such as career mobility and salary were not good predictors" (p. 4).

Kember (1995) incorporated some of these elements in his Model of Student Progress (Appendix A, Figure A1). Kember's model draws from Tinto's (1975) Model of Student Integration with some modifications for distance and adult education. Kember's major modification was redefining Tinto's social and academic integration constructs. Social integration in this model is "the degree to which the student is able to integrate the demands of part-time study with the continuing commitments of work, family and social life" (Kember, 1995, p. 50). Academic integration includes all the facets of the course the institution provides, whether academic, administrative, or social. Within the academic integration construct, the institution must "seek to develop a sense of belonging between the student and the institution" (p. 100).

Kember's model has four basic components: (1) entry characteristics, (2) social integration, (3) academic integration, and (4) outcomes (Appendix A, Figure A1). In this model, the student's entry characteristics influence the degree that social and academic integration occurs. Some entry characteristics are educational qualifications, family status, and employment (Kember, 1995, p. 70). Favorable entry characteristics lead to social integration (social integration is a challenge for part-time students). Enrollment encouragement, study encouragement, and family environment influence the level of integration. These two factors (enrollment encouragement and study encouragement) affect goal commitment—goal commitment is one of two factors that influence a student's decision to drop out or persist (Tinto, 1975). Students who are unable to integrate into the social environment often cite external factors as the cause; such factors include insufficient time, distractions, and unexpected events (Kember, 1995). Unless they are able to reconcile those challenges, they will proceed down a negative path and will find it difficult to have positive academic experiences. This would

suggest that distance learners who successfully navigate through social integration are more likely to integrate academically. Thus, minimizing the influence of external attributions on those learners is vital.

Kember (1995) also divides the academic integration construct into two variables. The positive variable is academic integration and the negative variable is academic incompatibility. The literature references both academic integration and academic incompatibility as factors affecting student retention (Cabrera, Castaneda, Nora, & Hengstler, 1992; Moore & Kreasley, 1996; Mylona, 1998; Tinto 1975). Each variable contains four sub-scales that focus on study approach (deep vs. surface), motivation (intrinsic vs. extrinsic), elements of the course (course evaluation), and language and reading skills (Kember, 1995, p. 99). Students who integrate academically often take a deep approach to learning. They are intrinsically motivated. They have positive experiences with the all aspect of their courses and they enjoy reading. Students on the negative track of academic incompatibility take a surface approach the learning (i.e. rote memorization of texts). They are extrinsically motivated. They provide negative feedback on aspects of their courses and they tend to have poor language skills.

The academic integration and academic incompatibility constructs have a direct impact on the grade point average. The grade point average in turn leads to a cost/benefit analysis, where the student weighs the costs of persisting (financial and non-financial) against any short-term and long-term benefits of continuing. Students who are struggling both academically and socially will engage in a cost/benefit analysis more frequently than students who have successfully integrated academic demands with their lifestyle. Kember's Model of Student Progress is longitudinal. Thus, as students progress through their course of study, the cost/benefit equation will vary with changes in the various variables in the model. For example,

students can recycle through the model on a different track with changes in personal circumstances, motivation level, and/or institutional support. The outcome in the model is the decision to persist or drop out. Students who continue will recycle back to earlier stages in the model.

In Kember's model, the path to persistence is one where both social and academic integration occurs. Social integration, which is dependent upon factors external to the institution, plays an affective role on academic integration. However, the academic integration construct does not have a reciprocal role. For her dissertation study on factors that lead to persistence for adult students in web-based education, Houle (2004) used Kember's framework and the Distance Education Student Progress (DESP) Inventory to explore the validity of the Model of Student Progress. The DESP Inventory was a survey instrument developed by Kember, Murphy, Siaw, and Yuen (1991). Houle modified Kember's model somewhat by removing the cost/benefit decision (her study focused on students completing one term rather than several terms), adding a course design factor, and changing GPA to course GPA (Appendix A, Figure A2). Houle's analysis found that Kember's model could be replicated without further adaptations. She also found the "the path from social integration to academic integration and external attributions to academic incompatibility were both statistically significant" (Houle, 2004, p. 98). This was consistent with Kember's findings, that the extent or ease of academic integration is influenced by the degree to which one is socially integrated.

Kember's model identified one construct that affects a learner's integration (social and academic): "entry characteristics". The model does not propose other constructs, beyond the entry variables, that may influence a student's academic and social integration. It does not emphasize the faculty's influence on the academic integration constructs. The model does not

raise the possibility of faculty, through the course design, buffering the impact of external attributes on academic integration. This issue was partially addressed by Houle's (2004) revised model of student progress. Through her research, Houle found that course design was an important factor in student retention in web-based courses. She added the course design factor to Kember's Model and linked it directly to both the academic integration and the academic incompatibility constructs. Although her intent was not to analyze faculty's influence on the course design, this factor did provide some surprising results.

Course design did not have a statistically significant impact on the academic integration and academic incompatibility constructs. Houle (2004) then added a path from course design to course GPA. Houle supported this modification with the theory that "students enrolled in well-designed courses would do better than those enrolled in poorly designed courses" (p.80). The relationship between course design and course GPA was statistically significant. Houle found a statistically significant positive path from course design to course GPA, indicating that students responded positively to a well-designed course, consequently leading to successful completion of the course. Her model is the only model that makes the connection, empirically, between course design and academic achievement. Her study also found that course GPA was the only factor that directly contributed to course completion or drop out. Through the discovery of the relationship between course design and course GPA, Houle's study opened a window for further inquiry.

The course design constructs also presented an opportunity to investigate the possibility that one can foster social integration through interactions embedded in the course. Houle's (2004) model, unfortunately, does not provide insight on the necessary elements of an online course

design. It left one to wonder what she meant by a well-designed course. As discussed earlier, the literature points to some basic characteristics of a well-designed online course.

I argue that components of the academic constructs, such as faculty, peer, and course design, could serve as catalysts for reframing students away from the negative track toward successfully completing online courses. As depicted in Appendix A, Figure A3, I hypothesize that reframing is possible with quality interactions fostered by an online community. A well-structured course design that allows for quality engagement among faculty, peers, and content will promote a sense of community among the learners. In addition to a few exogenous factors, student's entry characteristics may also influence students' sense of community. Those who feel this sense of community will become more engaged in the course through their participation, which consequently will increase their probability of earning a higher grade in the course and completing the course.

## **Conclusion**

The literature review presents research on various factors that are important for the adult learner's success in the online environment. It offers insight on adult web-based learners, their needs, and the factors that are important for their success in the online environment. The review highlights the need for a well-structured course that promotes different forms of interactions. Each form of course-embedded interaction is described as are the web-based tools that support them. The literature underlies the value of online communities in engaging learners and enhancing learning. It puts emphasis on the instructor as the key architect of community building in the online environment. The instructor's influence is woven into the course through the manner in which he/she facilitates the interactions. My goal is to accentuate the instructor's social and technical roles because the literature identifies these areas (particularly the social role)

as the weakest links in the online environment. These roles combined create the foundation for a strong learning community. The learning community, according to Palloff and Pratt (1999), “is the vehicle through which learning occurs online” (p. 29).

Overall, this review provides a foundation from which to begin answering the overarching question of the study: *What are the relationships among course design, sense of community, and achievement in web-based courses?* The literature reveals some gaps in understanding how each construct relates to achievement and the interaction among them. The literature linking course design and sense of community to academic achievement is absent. Also, there is little empirical evidence linking online course design and sense of community. Finally, there are no studies that specifically look at the effect of external (non-course) factors on the online learner's sense of community. Given that interactions and community receive many accolades in the online learning literature, developing an understanding of how each relates to the adult web-based learner's academic achievement is a natural next step. Appendix A, Figure A3 depicts the proposed relationships among the factors. Additional information on these relationships will contribute to the existing body of knowledge offered in this review. This study aims to gather new data that address each of these issues. The next chapter presents the methodology used to collect and analyze the data that will help to better understand the relationship among course design, sense of community, and achievement in web-based courses.

## **Chapter III**

### **Methodology**

This study examined the relationship among several factors and adult student achievement in web-based courses. The primary research question guiding the study was: *What are the relationships among course design, sense of community and adult achievement in web-based courses?* This chapter describes the research methodology used to collect and analyze the data for this study. It provides an overview of the theoretical framework and describes the design, sampling strategy, and data collection process used. The chapter continues with a review of the survey instrument, the instrument's reliability, and how the scales used in the analysis of the data were constructed. It concludes with a description of the statistical methods used to analyze the data, the ethical considerations relevant to the investigation, and the study's limitations.

#### **Analytical Framework**

The framework for this study is an adaptation of Kember's Model of Student Progress (Kember, 1995) by Houle (2004). Kember's longitudinal model considers a multitude of variables that are instrumental in shaping the adult student's progress in distance education courses (Appendix A, Figure A1). Houle revised Kember's model by adding the course design factor. (Appendix A, Figure A2). Houle's study found a positive path from course design to course GPA. The analytical model for this study is presented in Appendix A, Figure A3.

The model used contains four constructs that affects the course GPA: (1) course design, (2) entry characteristics, (3) sense of community, and (4) participation. Course design reflects students' assessment of how well the structural dimensions were evident. The structural dimensions assessed in this study were four key elements identified in the literature: (1)

dialogue, (2) interactive content, (3) support, and (4) control (Coomey & Stephenson, 2001; Moore, 1989; Richards et al., 2004). Students' assessment of the course design would demonstrate the extent to which the course helped to foster a sense of community. The study assumes that the individual responsible for delivering the course (the instructor) is the course designer. There are many instances where the course designer is not the instructor. However, the study assumes the instructor has a certain amount of autonomy to refine and shape the interactions in the course as needed. Through his or her pedagogical, social, managerial, and technical roles (Collins and Berger, 1996 as cited in Palloff and Pratt, 1999), the instructor, is in a position to develop the course in a way that promotes positive faculty and peer interactions and a sense of community (Odin, 2002; Palloff & Pratt, 1999). Sense of community results from various forms of interactions embedded in the course.

Sense of community was also thought to be influenced by the student's entry characteristics. The entry characteristics include demographic characteristics, such as family and employment status, and educational background. In their respective studies, Kember (1995) and Houle (2004) found a significant path between entry characteristics and the social integration constructs, and a significant path between the social integration constructs and the academic integration constructs. In both Kember's and Houle's models, social integration represents the extent to which students reconcile external demands with the institutional demands. Academic integration represents students' experiences with all facets of the course.

According to Tinto (1993), social integration and academic integration are more closely tied at the graduate level than at the undergraduate level. Interactions between the social and academic communities are intertwined such that social experiences become part of one's academic experience and vice versa. At the graduate level, students' "academic and social

commitments are localized within the department” (p. 236). Tinto asserts that a student’s social experience within a community of peers and faculty comes to influence the development of academic competencies. One can make a similar case for the online environment where online interactions with faculty and peers are viewed as unique sources of learning in online courses (Swan, 2001). Therefore, I defined social integration as the extent to which students become immersed in the social dynamics and interactions of an online course. Social integration in this study is students’ sense of community.

Sense of community was measured by (1) the community of students’ feelings "regarding their connectedness, cohesion, spirit, trust, and interdependence," and (2) the community members' feelings as to whether or not their educational goals and expectation are being satisfied (Rovai, 2002). Sense of community in an online environment was thought to promote greater interaction and participation. Participation refers to the level of involvement in the course. It is through such participation that learning occurs (Vygotsky, 1978; Wenger, 1998).

As stated previously, the source of students' sense of community in a hybrid-online course may go beyond the course design and individual characteristics. Factors external to the course may influence students' sense of community and course achievement. The first factor of interest was students' real vs. expected expectations of the course. This reflects the extent to which their experience in the course aligned with their expectations. Students with realistic expectations about online courses tend to be more successful and thus become more engaged when their expectations are realized (Goodenow & Grady, 1993; Valasek, 2001). The second factor was students' motivations for enrolling in the course. Bell (2007) stated that the reason for taking a course is an important element for achievement. The third factor was students' general sense of belonging in the institution. This goes beyond the course experiences. Students who

have positive experiences with members of the institution and identify with the institution tend to be more engaged and connected. Each of these exogenous factors may influence students' sense of community in a course and subsequently their course achievement as measured by the final course grade. Even though I analyzed the relationship among these exogenous factors and course final grade, the aim of this study was to simply assess the effects of the course design and student's entry characteristics on the course final grade as reflected in the model in Appendix A, Figure A3.

The model suggests several hypotheses. The first hypothesis is that a well-designed course that promotes a deep approach to learning coupled with positive faculty and peer interactions will promote a sense of community and have a positive impact on student achievement and retention. The literature points to varied elements to describe well-designed online courses. This study focused on four elements that resonate across the literature: (1) support, (2) dialogue, (3) control, and (4) interactive content (Coomey & Stephenson, 2001; Lee & Paulus, 2001; Whiteman, 2002;). Embedded in these factors are three types of interactions (learner-instructor, learner-peer, learner-content) that are vital in online courses. Since these interactions are bundled within three of the four factors (support, dialogue, interactive content and control), I proposed that these factors will operate as a system to influence students' sense of community and level of participation.

The four elements (support, dialogue, control, and interactive content) were combined into one course design factor. These factors were not analyzed individually because of the study's sampling limitation which I will discuss later in this chapter. As such, Appendix A, Figure A3 reflects a condensed depiction of the course design construct. The second hypothesis was that favorable entry characteristics, as measured by family support, number of hours worked,

prior online experience, etc. will lead to a higher sense of community, greater participation, and subsequently a higher course GPA for the adult distance learner.

### **Study Design**

I used a cross-sectional survey design to investigate the relationships among course design, entry characteristics, sense of community, and final course grade. This design is appropriate when one wants to examine several groups at one moment in time (Mertens, 1998). The survey instrument consisted of items, derived from a review of the literature, to measure the following constructs in the model: (1) entry characteristics (Kember et al., 1991; Picciano, 2002; Swan, Shea, Fredericksen, Pickett, Pelz, & Maher, 2000); (2) course design (Conrad, 2005; Martyn, 2003; Valasek, 2001; Whiteman, 2002; Wilson, 1996); (3) participation (Picciano, 2002; Poole, 2000), and (4) sense of community (Rovai, 2001). Rovai (2002) developed an instrument to measure classroom community. This instrument measured two broad elements of classroom community: (1) feelings of connectedness, and (2) feelings about the extent to which interactions within the community help members to construct understanding and achieve learning goals. In addition, the survey contained items to measure the three exogenous constructs that were thought to contribute to students' sense of community: (1) motivation, (2) sense of belonging, and (3) real vs. expected experience (Hurtado & Carter, 1997; Mallette & Cabrera, 1991; National Survey of Student Engagement, 2008; Pascarella & Terenzini, 1980;). See Appendix B for a copy of the survey instrument.

### **Sampling**

The research site was a private not-for-profit university in the Midwest having multiple campuses. The university's core values are (1) to serve the community, (2) create opportunity, and (3) engage in experiential teaching. Its diverse student body includes traditional students as

well as adults who are working full-time. The student demographics in the graduate school of management are 67% female, 33% male; average age of 31; 95% part-time, 5% full-time. To accommodate its diverse population, the university offers a variety of enrollment options in its graduate business program: day full-time, evening part-time, and midday part-time. The university also offers a full-time dual BBA/MBA degree. Although the graduate school does not offer an online program, it does offer most of its business courses in either the traditional or the online format. All students in the program may register for an online course.

The university supports its students through graduation with a strong academic advising program and encourages ongoing interactions between students, faculty, and staff in order to maintain a sense of community throughout the university. The graduate school identifies its faculty as passionate about education, committed to guiding students to achieve success, and skilled at building a learning community in the classroom. Instructors who teach online are members of the institution's online committee and have access to the online instructors' group page on Blackboard. The committee meets regularly to share best practices, to develop policies for online course delivery, and to support new faculty teaching online.

Online instructors use their Blackboard group page to collaborate and to access resource material on distance education practices. Online courses are often developed by career course developers, individuals who typically do not teach the courses, rather than the instructors. This approach creates a disconnect involving the developer, the instructor, and the students. Such a disconnect has a negative impact on the learning process and student satisfaction when not addressed (Stephenson, 2001; Swan, 2001). At this institution, the course developers are instructors who had previous experience teaching their respective course in the traditional face-to-face environment before adapting it to an online format. Most of these instructors also had

experience teaching online before building their course. However, they may not have had experience designing or building an online course.

The institution does not have an "online course designer" on staff. Members of the faculty who show interest in online course development are recruited to develop these courses. The institution provides instructors a framework for building their online courses. The instructors have the discretion to modify parts of the template to better align with their particular courses. The following components are standard across all the online courses: (1) three face-to-face sessions, (2) weekly discussion boards, (3) content organized in modules, (4) multiple external links made available via a resource page, and (5) multiple assessment methods for computing final grades. The weight allocated to each assessment method may vary among instructors. Faculty members who successfully develop an online course for the graduate school mentor new online instructor recruits.

The institution highlights the ongoing relationships between students and members of the academic community (students, faculty and staff). The university promotes itself as the only institution that provides the individual attention and supportive environment required to meet all of its students' educational needs every day. It seems to emphasize the social aspect of education and represents an extreme case in its commitment to building classroom community (Mertens, 1998). Consequently, it is more than likely that this institution is better at building online community in its courses. The study participants consisted of all graduate business students enrolled in at least one three credit hour online graduate business course. The entire population of graduate business students was selected to increase the sampling pool for the study.

## Data Collection

The data collection process proceeded in two phases: (1) the surveying of all graduate students enrolled in online courses, and (2) the review of discussion board postings. In phase one, I conducted a voluntary survey of students enrolled in online business courses. During a one year period (Summer , 2008–Summer , 2009, which consisted of five academic quarters), all students enrolled in online graduate business courses received an e-mail notification and an invitation within the course management system to participate in the study. Students who chose to participate read and submitted a consent form (Appendix D) before gaining access to the web-based survey. Web-based surveys are appropriate when surveying geographically dispersed populations (Dillman, 2000) and are appropriate when collecting data from students taking courses online. The survey resided on a secure server housed at the institution and was accessible only by its students. This approach ensured that students completed only one survey and alleviated the need to create separate accounts for each student on an external server.

Students received notifications of the survey at the beginning of week eight of the 10-week quarter. Given the fast pace of the quarter system, I allowed students sufficient time to acclimate themselves with the online course so as to receive meaningful feedback on their experiences. Brown (2001) found that it takes students a longer time to establish a sense of community in an online course than in a face to face course. One of the reasons cited was students did not have sufficient time to devote to online interactions with instructor and classmates. It is unclear from the literature how much time is needed to develop a sense of community. What is evident, though, is that students are more likely to develop a sense of community when given ample opportunities to interact with the instructor and classmates. For example, Rovai (2001) reported that during a five week online course a sense of community

among learners increased partly because of the high level of interactivity in the course. Prior to completing the survey for this study, participants had a minimum of seven weeks of online interactions in addition to two face-to-face classroom interactions.

Given the courses were 10 weeks long, surveying students during the last two weeks of the term maximized the number of weeks available for interactions and building community. Students had two weeks to complete the survey. The deadline for submitting the survey was the last day of week nine. To enhance the response rate, students who did not respond during the two-week survey period received reminder e-mails at the end of each week. I obtained course completion data and grades from students who completed the survey. Each student had a unique identification number. This identifier remained as the only identifier for the data until the term was completed and grades were submitted.

I also followed-up, via e-mail, with students who dropped the online courses in which they were registered. The purpose was to have comparative data of persisters and non-persisters. Initially, I wanted an academic advisor to administer the survey to any student who submitted a drop request for an online course. However, this process became too cumbersome to implement. At the branch campus, multiple individuals processed drop requests and often students completed the drop request form without speaking with the advisor. The deadline to drop a graduate level course was week five. Each quarter during week eight, I obtained a list of students who dropped their online course for that term. I e-mailed those students a request for their participation and survey response. The few students who dropped did not respond to my request.

For the second phase of data collection, I sought permission from the senior level administrator at the institution to collect the actual interactions recorded in each of the courses I

surveyed. This request required faculty participation. I asked instructors to archive their courses and for their permission to access the archive. At the end of each quarter, I was granted Blackboard access to all graduate level online courses. After I examined the survey data, I reviewed each student's discussion board postings to assess the actual level of participation. For each student, I recorded the number of discussion board postings per week and whether or not the postings went beyond yes or no responses. The number of postings served as an objective indicator for actual participation. These data are valuable, as Coomey and Stephenson (2001) observe, in that the intensity in which the four elements (dialogue, involvement, support, and control) are applied will vary, depending on the instructor's pedagogical approach and whether "the learning activity is tightly specified or open-ended" (p. 40). The instructors in this study had a minimum posting requirement for their course.

There were a total of 269 students enrolled in the graduate business online courses during the one-year survey period. Two-hundred-and-thirteen students completed the courses, 42 (16%) dropped courses during the first week of a given term, and 14 students (5%) dropped courses during weeks 3 and 4 of a given term. Of the total 213 students who completed their course, 89 (42%) completed the survey. Efforts to collect data from the remaining students were unsuccessful. Although the response rate was low, it was encouraging to see that the demographic makeup of my study participants was similar to the general population of graduate students who completed an online course at the institution. The majority of the participants were female (68%), single (62.5%), Caucasian (38.6%), and employed (79.5%). The small sample posed a challenge in interpreting the results. Keith (2006) recommends that "10 to 20 participants for each independent variable" (p. 202) are needed for adequate power (the probability of rejecting the null hypothesis when it is false) in multiple regression. The original

thought was to analyze each of the four dimensions of the course design (Appendix B).

However, that would have required at least 130 participants. Because my sample size was less than that, I proceeded with a condensed model (Appendix A, Figure A3) with final course grade as the independent variable. To reiterate, the condensed model combined the four dimensions of the course design into one course design factor.

### **Data Reliability**

**The instrument.** As discussed earlier, the survey instrument (Appendix B) consisted of items to measure each of the constructs depicted in the model to help me answer the question: What are the relationships among course design, sense of community and final course grade? The instrument went through several iterations. It was reviewed for clarity by members of my dissertation committee, an expert in instrument design, faculty members who have taught online courses, and former online students. Items that were unclear were revised and a few items were deleted because they were either redundant or could not measure the corresponding construct. The final survey instrument (Appendix B) contained two sections: (1) questions pertaining to the participants' background characteristics, and (2) questions pertaining to their perceptions of the constructs in the model.

The background questions consisted of 13 questions that focused on three areas: (1) personal demographics (age, gender, marital status, and ethnicity), (2) family and employment status (number of children, number in household, employment status, hours worked), and (3) educational background (number of credits completed, GPA, number of online courses completed, computer and subject expertise). These questions were adapted from Houle's (2004) modified version of the distance education student progress inventory. In addition to the background questions, the instrument consisted of questions pertaining to the student's current

academic status, that is, the number of courses in which the student was currently enrolled (online and traditional), current grade in the online course, and where they do their homework for the course.

The questions pertaining to participants' perceptions of the course design, sense of community, and the exogenous factors were structured on a four-point Likert scale, with 1 representing "Strongly Disagree" and 4 representing "Strongly Agree". Items for the course design construct were categorized according to the four dimensions adapted from Coomey and Stephenson (2001): (1) Dialogue—five items elicited information regarding the varied opportunities for discussion in the course; (2) Interactive Content—four items related to the ease with which students could navigate through the course; (3) Support—seven items to relay the level and frequency of support students received from classmates; and (4) Control—six items related to students' perceived control over how they experience the course. These scales were developed primarily from a review of the online learning community literature.

The sense of community questions were adapted from Rovai's (2002) classroom community items and were organized into two categories. Eight items were related to the extent students felt connected in the course and eight items sought to identify if the course met their learning expectations. The instrument also included nine items identified from the interaction literature that allowed students to report their level of participation in the course. The final set of items represented the three exogenous factors: (1) Belonging—seven items that asked students to report their sense of belonging to the institution; (2) Real vs. Expected Experience—ten items that asked students to assess their satisfaction with various aspects of the course; and (3) Motivation—fourteen items that asked students to report why they remained in the course.

**Scale construction.** The scales used in the analysis were constructed by calculating the mean score for each group of items for each student. Each participant's score on each individual item were added together. The sum was then divided by the total number of items in the scale. The scales were grouped by the larger construct they represented. This macro grouping was necessary given the small sample of participants in the study, which limited the depth of data/variable analysis possible. A test for Cronbach's alpha was conducted in order to determine the internal reliability of each scale. A Cronbach's alpha value of at least .70 was required in order to declare that a scale is reliable. As shown in Table I, all scales can be considered statistically reliable, with Cronbach's alpha measuring more than .70 for each.

TABLE 1

*Cronbach's Alpha for the Survey Instrument and Survey Constructs*

Construct	Sample Items	N of Items	Alpha
Course Design	<ul style="list-style-type: none"> <li>• The course provides opportunity for online discussions</li> <li>• The course is well organized</li> </ul>	23	.933
Sense of Community	<ul style="list-style-type: none"> <li>• I feel connected to others in this course</li> <li>• I depend on members of this course</li> </ul>	16	.908
Real vs. Expected	<ul style="list-style-type: none"> <li>• When compared with your expectations, how satisfied are you with the amount of interaction with classmates?</li> <li>• When compared with your expectations, how satisfied are you with the timing of feedback from the instructor?</li> </ul>	10	.920
Motivation	<ul style="list-style-type: none"> <li>• To what extent does the amount of interaction with classmates contribute to your continued enrollment in the course?</li> <li>• To what extent is the course required for the degree contribute to your continued enrollment in the course?</li> </ul>	15	.875
Belonging	<ul style="list-style-type: none"> <li>• At this college, beyond this on-line course, I feel connected to other students.</li> <li>• At this college, beyond this on-line course, I feel I belong here.</li> </ul>	5	.832

After collecting data through the survey and the discussion board postings, and after collecting final student grades, I assigned each case (student) a unique identifier and checked for

unanswered items. The majority of the participants completed the entire survey. Of the three students who submitted unanswered sections, one was dropped from the study because half of the items were left blank. For the remaining two cases, there were less than five unanswered items with no pattern between the cases. To complete these two surveys, I calculated the mean scores from the respondents who answered each of those questions and inserted the mean scores for the unanswered items.

Prior to conducting all analytic procedures, I tested the data for normality linearity, outliers, and multicollinearity to see if the data fulfilled the assumptions needed to validate the correlation and regression test results. The first assumption test conducted was the Shapiro-Wilk's W test to check whether the data fell into a normal distribution. The data violated this assumption since the significance values for several of the variables was less than .05, which means that the data did not meet the required assumption for normality. The data were also tested for outliers and other influential cases using the Residual Statistics function of the SPSS 17.0 program. The model did not violate the assumption of outliers required for the regression. All the Cook's Distance (D) values, which is a standard measure of influence, were less than 1 ( $D = .022$ ). Cook and Weisberg (1982) suggest that values greater than 1 are problematic.

The third assumption test conducted was the test for normality. This test is also necessary for multiple regression. The data were tested using the ANOVA test of linearity function of SPSS 17.0, which compared the data to a linear model. The results of this test indicated that there was no significant difference between the data and the linear model. The significance values for Deviation from Linearity were all above .05, which indicated that there was no significant deviation between the data and the linear model. This means that the data fulfilled the assumption of linearity required for multiple regression. The final assumption test

performed on the data concerned multicollinearity, or the high level of intercorrelation among independent variables. It is assumed that there is no multicollinearity when the tolerance level is above .20 and if the variance inflation factor (VIF) is less than 4. The results of the multicollinearity tests showed that the tolerance values for all the study variables and entry characteristics variables were greater than .20, which indicated that the assumption for no multicollinearity was fulfilled for this study's data set.

### **Analysis**

I analyzed the data using the Advanced Statistical Package for the Social Sciences (SPSS) software. I began the analysis by calculating descriptive statistics on the participants (demographic and other personal characteristics) to get a distribution of the variables that will help me answer the question: *What are the relationships among course design, sense of community, and final course grade?* I calculated the frequency and percentage for each categorical variable and the mean, range, and standard deviation for each continuous demographic variable. This analysis gave me a sense of whether my sample was reflective of the population surveyed as well as the general population of adult web-based learners. I also calculated summary statistics (range, min and max scores, mean, and standard deviation) to get information on the distribution of my constructs and latent variables. This analysis provided a general overview of the participants' perceptions of the course design, their sense of community, their participation level, and the extent to which their experience in the course aligned with their expectation.

Next, given the small sample size for the study, I conducted a preliminary analysis to identify variables to include in the regression. I first sought to determine which entry characteristics variables to include in the regression. I calculated Spearman correlation

coefficients using a two-tailed test of significance. The data did not fulfill the assumption of normality required for the Pearson correlations test. I therefore used the Spearman correlation to describe the relationships among my variables. Spearman's correlation test is used for non-parametric data and achieves the same result as the Pearson correlation test. The first correlation test helped to identify the entry characteristics variables to answer the question: *What is the relationship between the entry characteristics and sense of community?* I explored my hypothesis about the personal characteristics of participants who experience a sense of community. For example, I thought students with prior online course experience would be more likely to experience a sense of community than students who had no prior experience in the online environment. The second correlation test helped to identify the entry characteristics variables to answer the question: *What is the relationship between the entry characteristics and achievement?* The significant relationships from both tests were used in subsequent analysis. The third correlation test was used to investigate the relationship between each of the remaining constructs and the final course grade. This test also provided information about the relationship among the constructs. The implication of those relationships on the regression model was considered. Once I established the relationships, I evaluated the model by conducting a series of regression analyses.

Since the distribution of the outcome variable (final course grade) was skewed, with only 7% of the sample earning a C grade or below, I opted to create a new outcome variable with two categories of grades: A grade and Non-A grade. I recognized the fact that a B student is different from a C student who in turn is different from an F student. However, given the small sample and the low variability in the outcome variable, it seemed appropriate to combine the non-A grade cases into one category and conduct logistic regression analysis of the data. Logistic

regression is appropriate when the outcome variable is dichotomous (Field, 2009). It allows the researcher to predict the binary outcome variable from one or more categorical or continuous predictor variables. This regression method allows for predictor variables that are not normally distributed.

For the first regression, I regressed course design on final course grade to determine the extent to which the course design alone affected the final course grade. I proceeded to test the proposed model (Appendix A, Figure A3). The logistic regression analyses examined the effects of the course design, the sense of community, actual participation, and the three exogenous constructs on the final course grade. The model also included the three entry characteristics variables found to have statistically significant correlations with the final course grade. All of the constructs, in addition to the three entry characteristics variables, were regressed on final course grade using the enter selection method. In this method, all of the variables were entered simultaneously.

### **Ethical Considerations**

A crucial element of any study is the researcher's adherence to ethical standards as these apply to his or her participants. This study used a survey of graduate business students as its primary data collection method. This approach required that I obtain appropriate Institutional Review Board (IRB) approval and informed consent from each participant. The informed consent communicated the study's intent, data collection procedures, ensured the confidentiality of the data provided, and made it clear to each student that participation was voluntary. I obtained approval from the senior level administrator (SLA) responsible for institutional research at the institution. I contacted the SLA and provided information about my study. The information I provided included the framework for the study (Appendix A, Figure A3), the

definitions (Appendix B), the survey instrument (Appendix B), and a synopsis of the study (Appendix C).

I secured IRB approval from the University of Illinois at Chicago (UIC) and the participating institution. Once I received IRB approval from UIC and the host institution, I proceeded to gain access to the students. I worked closely with the SLA, the academic advisors, and the instructors to recruit student participants, publish the survey, and notify the students. In order to obtain the needed course completion data for each student who returned the survey, I initially retained all student identifiers in the data. Once the term had ended and I had obtained the course outcome data, I removed all identifiers from the data. The secondary data collection method was a review of discussion board postings. To access these data, I asked each instructor to archive his or her course participation data and grant me access to the archive after the course had ended and grades were submitted to student records. Once I completed my analysis, I asked the system administrator to remove the archived course from my account. Lastly, I used a pseudonym for the institution when reporting my findings. The dissertation was approved by the Institutional Review Board at the University of Illinois at Chicago in Spring 2008.

### **Limitations**

The goal of this study was not to make general claims about the experiences of distance learners. This study intentionally focused on a specific group of graduate students in order to minimize the number of outside variables. As such, it is probable that the experiences of the graduate business students in this study may differ from the experiences of students in other disciplines and other universities. The response rate for the study was low (42%) with only 88 usable surveys. For multiple regression analysis, "the larger the sample size, the more precise the statistical estimate" (Kerlinger & Pedhazur, 1973, p. 447). Even though the 88 cases met the 15 cases/variable

threshold, a larger sample would have been preferred given the complexity of the proposed model (Appendix A, Figure A3). A larger sample would have also allowed for a broader definition of the outcome variable for the study.

Academic achievement for this study was defined as the final course grade. Grades as a measure of academic achievements is often the subject of debate in the education community. Some argue that it may not be a reliable and valid measure for communicating student academic progress and others argue that, when proper assessment methods are used, grades could be a good measure of academic achievement (Allen, 2005). This study did not investigate the assessment methods used in each course to calculate students' final grades. However, the potential for bias in grade computation is recognized as a limitation for this study, as well as the fact that academic achievement was measured as either an "A" or "non-A" grade. Academic achievement is more robust than indicated in this classification. I recognized the possibility that the individual experiences of participants in the non-A category may vary and as a result limited my ability to make general claims about this group. Also, the skewed grade distribution for this study and the small sample were a limitation in that they did not allow for a comprehensive understanding of the relationship among course design and final course grade.

The experiences of online learners may be different from those who participated in the study based on a variety of factors, which can include their cultural and community orientations. I recognized the possibility that students who are more community oriented are more likely to self-select to participate in the study. This characteristic may have influenced how these students assessed the course design and the researcher could not control for it. Also, the fact that students in this institution had opportunities to interact with peers outside of the course limits understanding of the impact of the course design on students' sense of community. The courses

in the study were blended online courses. The fact that participants in the study had the opportunity to meet face-to-face at various points in the course also limits our understanding of the impact of the course design on students' sense of community. The face-to-face interactions may have contributed to their greater sense of community. As a result, the conclusions drawn from this study about the relationship between course design and sense of community may not be applicable to fully online courses.

The conclusions from this study are also limited by the fact that at this institution faculty assigned to develop online courses had the discretion to modify certain elements of the online course template. As such, the findings from this study may not be applicable to institutions that do not allow any modifications to their online course templates. Lastly, another possible limitation is the fact that the institution operates on a quarter system (10 weeks per term). As such, students have a short period of time to develop a “sense of community” when compared with a 16-week semester course. I reduced this risk by surveying students during the second half of the quarter. Future studies can examine the relationship among course design, sense of community, and course duration (10 weeks vs. 16 weeks).

This study was able to show how the course design and entry characteristics relate to the final course grade of graduate business online learners. The fact that the entire population of graduate business distance learners at the site was surveyed and the participants were a good representation of that population may provide valuable data for similar institutions offering online graduate business courses. Of interest will be findings pertaining to the demographic variables that are positively related to the intervening variables in the model and the final course grade. In addition, this study provides information regarding the relationship between the course design and the sense of community construct. The findings in this area may ignite interest in

better understanding how individual elements of an online course design relate to sense of community. Such interest may bring about new hypotheses for future research.

## Chapter IV

### Findings

This chapter presents the findings obtained from the research methodology described in Chapter III. Data were collected through an online survey and a review of participants' discussion board postings. The central purpose of this study was to obtain evidence regarding the relationships among course design, sense of community, and achievement in web-based courses and uncover answers to the following questions:

1. What is the direct relationship between course design and achievement?
2. What is the relationship between course design and sense of community?
3. What is the indirect relationship between course design and achievement, where sense of community and participation are the intervening variables?
4. What is the relationship between the entry characteristics and sense of community?
5. What is the relationship between the entry characteristics and achievement?
6. What is the relationship among the exogenous factors (real vs. expected experience, motivation, and belonging), sense of community, participation, and achievement?

I hypothesized that the probability of earning an A grade in an online course would be higher for students who (1) have a positive perception of the course design and (2) felt a sense of community in the course. I also hypothesized that a student's sense of community would stem from (1) a positive perception of the course design and (2) various entry characteristics. I predicted that students with high perception of the course design and favorable entry characteristics would exhibit a greater sense of community, and thus have a higher degree of participation and ultimately earn an A grade in the course.

This study found that several entry characteristics variables had positive significant effects on course achievement. However, only one of the entry characteristic variables was related to students' sense of community. That variable was student gender. The study also showed that course design had a significant influence on students' sense of community as did each of the exogenous variables. These findings imply that student sense of community stems from several sources: the course design, the student's personal characteristics, and factors external to the course. The study also showed that the student's final grade was more strongly related to the entry characteristics than to course design.

This results chapter is divided into two sections. These sections are: (1) a report of the descriptive statistics of the demographic characteristics of the students as well as the constructed variables in the study, and (2) a report of the correlation and regression analyses of the model proposed in the study.

### **Descriptive Analysis**

**Demographic and other personal characteristics.** The descriptive statistics presented in this section are for the entry characteristics identified in the proposed model (Appendix A, Figure A3). Frequency distributions for the categorical variables are provided in Table 2. As noted in Chapter III, the participants were representative of the population of students surveyed, where the majority of the participants (68.2%) were female and (38.6%) were Caucasian. The majority of the participants (62.5%) were not married, while just over half of the participants (53.4%) had three to five people living in their house. Houle (2004) suggests that a student's "personal and home life may affect the level of encouragement that may be received from family and friends" (p. 93). Thus, one could hypothesize that those students living alone could have a

higher need for peer support given the lack of home-life support. The majority of the participants in the sample (79.5%) were employed. Some studies have shown that external commitments, such as employment, may pose a distraction since the learner may be less engaged in the course; ultimately this may affect their chances for success (Moore & Kearsley, 1996). Just over half of the participants (52.3%) were comfortable with their use of computers, but not so comfortable as to describe themselves as experts. Although expert knowledge may not be necessary to succeed in the online environment, one must be reasonably comfortable with computers in order to participate at the level needed in online courses (Pituch & Lee, 2006). Finally, more than half of the participants (54.5%) reported their knowledge of the course's subject was beyond the introductory level.

Summary statistics including means and standard deviations, along with the minimum and maximum values were calculated for each of the continuous demographic variables in the study (see Table 3). The average age of the participants was 31.08 years ( $SD = 8.47$ ), while the average number of children the participants had was 1.00 ( $SD = 1.30$ ). The average hours worked per week was 3.08 hours ( $SD = 1.51$ ), while the average credit hours earned was 19.22 hours ( $SD = 25.30$ ). The average overall GPA of the participants was 2.94 ( $SD = 1.47$ ), while the average number of online courses completed was 1.50 ( $SD = 1.12$ ).

TABLE 2

*Demographic Characteristics of Participants*

Variable	Frequency ( <i>N</i> = 88)	Percent
<i>Gender</i>		
Female	60	68.2
Male	28	31.8
<i>Ethnicity</i>		
Asian	6	6.8
Black	27	30.7
Hispanic	13	14.8
Caucasian	34	38.6
Other	8	9.1
<i>Marital Status</i>		
Not Married	55	62.5
Married	33	37.5
<i>Number of People Living in Your Home</i>		
(1-2)	35	39.8
(3-5)	47	53.4
(6-10)	6	6.8
<i>Currently Employed</i>		
No	18	20.5
Yes	70	79.5
<i>Level of Computer Expertise</i>		
Novice	2	2.3
Intermediate	46	52.3
Expert	40	45.5
<i>Knowledge about the Subject</i>		
Novice	36	40.9
Intermediate	48	54.5
Expert	4	4.5

TABLE 3

*Summary Statistics for Demographic Characteristics (N = 88)*

	Min	Max	M	SD
Age	21	58	31.08	8.47
Number of Children	0	4	1.00	1.30
Hours Work Per Week	0	4	3.08	1.51
Hours Earned	0	177	19.22	25.30
GPA	0	4	2.94	1.47
Number of Online Courses Completed	0	3	1.50	1.12

**Constructs.** In order to explore the relationships among course design, sense of community, and achievement in Web-based courses, I calculated the summary statistics for each construct, including means and standard deviations, along with the minimum and maximum values (see Table 4). The scores represent the average scores for the combined items that comprise each of the scales. The results are presented in the order depicted in the model (Appendix A, Figure A3).

The course design construct is the main construct in the model and reflects students' perceptions of how well the structural dimensions of the course were present. The range of possible scores for this construct is 23 to 92. The average course design score was 71.26 ( $SD = 13.81$ ). A mean of 71.26 indicates that the participants had a moderate to high perception of the course design. The model predicts that a well-designed course will promote a sense of community among students. The extent to which students experienced a sense of community in the course is reflected by the average score for the construct. The average sense of community score was equal to 48.95 ( $SD = 9.35$ ), which indicates that the participants had a moderate to

high sense of community in the course. The range of scores for this construct was 16 to 64. As for participation, the participants tended to post a little more than twice a week, as indicated by the 2.48 ( $SD = 1.09$ ) average score for actual participation on a scale of 1 to 4.

Finally, the summary statistics for the exogenous constructs of real vs. expected experience, motivation, and belonging were also calculated (see Table 4). It would appear from the average scores that students' experience in the courses was moderately aligned with their expectations. Students were moderately motivated to continue in the course and felt a moderate sense of belonging to the institution. The average scores for real vs. expected experience was 29.84 ( $SD = 7.28$ ). The range of possible scores was 10 to 40. The averages for motivation and belonging were 40.17 ( $SD = 9.00$ ) and 13.77 ( $SD = 4.64$ ) respectively. The range of possible scores for motivation was 14 to 56 and 5 to 20 for belonging.

TABLE 4

*Summary Statistics for the Constructs*

	Possible Range	Min	Max	M	SD
Course Design	23–92	37	92	71.26	13.81
Sense of Community	16–64	25	64	48.95	9.35
Actual Participation	1–4	1	4	2.48	1.093
Real vs. Expected Experience	10–40	12	40	29.8409	7.28072
Motivation	14–56	18	56	40.1705	9.00858
Belonging	5–20	5	20	13.7727	4.64047

**Analysis of the Model**

The main purpose of the study was to determine the relationships among course design, sense of community, and adult student achievement in web-based courses, as noted in the

proposed model found in Appendix A, Figure A3. This model, broken down, suggests specific questions, which were individually examined using correlation analysis and regression analyses. As discussed in the previous chapter, I hypothesized that the probability of earning an A grade in an online course will be higher for students who (1) have a positive perception of the course design and (2) felt a sense of community in the course. I also hypothesized that a student's sense of community stems from (1) positive perception of the course design and (2) various entry characteristics. I predicted that students with a positive perception of the course design and favorable entry characteristics will exhibit a greater sense of community and thus have a higher degree of participation and ultimately earn an A grade in the course.

**Correlational analysis results.** Because of the number of entry characteristic variables theorized in the model, I decided to perform three correlational analyses as a way to better organize the data and get a clearer view of the relationships among my variables. The first two correlational tests focused on the entry characteristics and their direct relationships to community and final course grade. The third correlation test focused on relationships among the constructs and the final course grade. A positive correlation indicated that when one variable increased, the other variable increased as well. A negative correlation indicated that when one variable increased, the other variable decreased.

The results of the first correlation test performed provided information to help answer the question: *What is the relationship among the entry characteristic variables and sense of community?* As seen in Table 5, the results indicate that gender was the only entry characteristic that had a statistically significant relationship with sense of community. The correlation analysis shows that gender is negatively correlated with the sense of community, which indicates that

male students had a lower sense of community than female students. This finding was surprising because I expected to see more entry characteristics significantly related to sense of community (Kember, 1995).

The results of the second correlational analysis provided findings that addressed the question: *What is the relationship between final course grade and the entry characteristics variables?* The purpose of this particular correlational analysis was to identify the important entry characteristics as they relate to the final course grade. As seen in Table 6, of all the entry characteristics variables, only the respondents' gender ( $r = .227, p = .034$ ), marital status ( $r = .261, p = .014$ ), and the number of online courses they completed ( $r = .234, p = .022$ ) were significantly correlated with their final course grade. Thus, the participants in this study who were male or married, or had completed another online course had a higher final course grade than their fellow participants.

TABLE 5

*Results of Spearman's Correlation Test: Sense of Community With Entry Characteristics Variables*

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1. Number of Course Currently Enrolled	1.000	.288**	-.047	-.204	-.010	-.335**	-.011	-.161	-.397**	-.571**	.225*	-.235*	.005	.057	-.047	-.132
2. Number of Online Course Currently Enrolled		1.000	.015	-.212*	.044	-.084	.093	-.208	-.120	-.081	-.277**	-.231*	-.197	-.018	.087	-.069
3. Place where omework is done			1.000	-.017	-.035	-.024	.030	.009	.051	.005	-.024	-.059	.171	-.013	.017	.170
4. Age				1.000	-.083	.368**	.054	.590**	.246*	.228*	.140	.080	.004	-.125	.059	.094
5. Gender					1.000	-.025	-.036	.224*	-.137	-.099	-.023	.309**	-.023	.003	-.061	-.303**
6. Marital status						1.000	.310**	.506**	.218*	.243*	.095	.235*	.138	-.097	-.008	.169
7. Number Living in Home							1.000	.442**	-.034	-.090	-.052	.057	-.180	-.265*	-.066	.092
8. Number of Children								1.000	.256*	.201	.010	-.055	.018	-.213*	.036	.161
9. Employment Status									1.000	.843**	-.158	-.057	-.026	-.003	-.046	.137
10. Number of Hours Worked per Week										1.000	-.163	.023	-.086	.011	.065	.006
11. Number of Credits Completed											1.000	.257*	.125	-.085	-.106	-.164
12. GPA												1.000	.087	-.011	-.199	-.128
13. Online CourseCompleted													1.000	.127	.091	-.040
14. Computer Expertise														1.000	.266*	-.011
15. Subject Expertise															1.000	.093
16. Community																1.000

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

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

TABLE 6

*Results of Spearman's Correlation Test: Final Course Grade With Entry Characteristics Variables*

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1. Number of Course Currently Enrolled	1.000	.288**	-.047	-.204	-.010	-.335**	-.011	-.161	-.397**	-.571**	.225*	-.235*	.005	.057	-.047	-.162
2. Number of Online Course Currently Enrolled		1.000	.015	-.212*	.044	-.084	.093	-.208	-.120	-.081	-.277**	-.231*	-.197	-.018	.087	-.113
3. Place where homework is done			1.000	-.017	-.035	-.024	.030	.009	.051	.005	-.024	-.059	.171	-.013	.017	.640
4. Age				1.000	-.083	.368**	.054	.590**	.246*	.228*	.140	.080	.004	-.125	.059	.040
5. Gender					1.000	-.025	-.036	-.224*	-.137	-.099	-.023	.309**	-.023	.003	-.061	.227*
6. Marital status						1.000	.310**	.506**	.218*	.243*	.095	.235*	.138	-.097	-.008	.261*
7. Number Living in Home							1.000	.442**	-.034	-.090	-.052	.057	-.180	-.265*	-.066	.002
8. Number of Children								1.000	.256*	.201	.010	-.055	.018	-.213*	.036	.100
9. Employment Status									1.000	.843**	-.158	-.057	-.026	-.003	-.046	-.044
10. Number of Hours Worked per Week										1.000	-.163	.023	-.086	.011	.065	.101
11. Number of Credits Completed											1.000	.257*	.125	-.085	-.106	.039
12. GPA												1.000	.087	-.011	-.199	.174
13. Online Course Completed													1.000	.127	.091	0.243*
14. Computer Expertise														1.000	.266*	-.039
15. Subject Expertise															1.000	.080
16. Final Course Grade																1.000

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

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

The results of the third correlational analysis provided information about the relationship between final course grade and the main constructs and exogenous variables. As shown in Table 7, the results of the Spearman correlational analysis revealed that none of the study's major constructs were significantly associated with the respondents' final course grade. The results also did not reveal significant relationships between the final course grade and any of the exogenous variables. However, it did reveal high correlation among several of the constructs.

The correlations between course design and the sense of community ( $r = .832, p < .01$ ), participation ( $r = .234, p < .05$ ), real vs. expected experience ( $r = .778, p < .01$ ), motivation ( $r = .614, p < .01$ ), belonging ( $r = .454, p < .01$ ) are all positively significant, indicating a possible direct relationship between course design and each of those variables (Table 7). These correlations indicate that students with favorable perceptions of the course design felt a sense of community in the course and participated more. Their experience in the course was consistent with their expectation. These students were motivated to succeed and felt a sense of belonging in the institution. The correlation between sense of community and the aforementioned variables are consistent with those of course design, with the exception of participation. I hypothesized that students who experience a sense of community in the course will have a higher rate of participation than those who do not feel a sense community. This hypothesis was not statistically supported.

TABLE 7

*Results of Spearman's Correlation Test: Final Course Grade With Study Constructs*

	1	2	3	4	5	6	7
1. Course Design	1.000	.832**	.778**	.613**	.454**	.234*	-.032
2. Community		1.000	.763**	.601**	.434**	.145	-.017
3. RealExpected			1.000	.612**	.584**	.012	.097
4. Motivation				1.000	.356**	.006	.008
5. Belonging					1.000	.048	.070
6. Participation						1.000	-.117
7. Final Course Grade							1.000

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

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

**Regression analysis results.** Since the dependent variable, final course grade, is dichotomous, I used logistic regression to test the model. The next set of tests included logistic regressions to determine the direct and indirect relationships of the independent variables with final course grade.

**Relationship of course design with final course grade.** Although the data do not violate the assumption of multicollinearity as evident by the tolerance values greater than .20, the correlation analysis did reveal high correlation among several constructs in the model. To minimize the effect of any hidden multicollinearity issues, the first set of regression tests investigated the direct relationship between the course design as the independent variable and final course grade as the dependent variable. Course design is the main construct of interest in this study. The results of this test are shown in Table 8. The model chi-square test ( $X^2 = .363$ ,  $df$

= 1,  $p > .05$ ) indicates that the model is not statistically significant and the course design variable does not significantly affect the final course grade ( $B = .009$ ,  $p = .549$ ).

TABLE 8

*Results of Logistic Regression Analysis: Course Design on Final Course Grade*

	B	S.E.	Wald	df	Sig.	Exp(B)
Step 1 <sup>a</sup> Course Design	-.009	.015	.360	1	.549	.991
Constant	1.177	1.136	1.073	1	.300	3.245
Tests			X <sup>2</sup>	df	p	
Overall Model evaluation						
Likelihood-ratio test			.363	1	.547	
Goodness-of-fit test						
Hosmer & Lemeshow			6.125	7	.525	

a. Variable(s) entered on step 1: CourseDesign.

**Full regression model.** The next set of regression tests analyzed the full regression model proposed. This regression model examined the effects of the course design, the sense of community, and the actual participation on the final course grade. The model also included the three entry characteristics variables found to have statistically significant associations with the final course grade, specifically gender, marital status, and the number of online courses completed. These entry characteristics variables were used as independent variables. The logistic regression model was constructed using the enter selection method. In this method, all of the variables were entered simultaneously. As indicated in Table 9, the full model was found to be statistically significant (Chi-square = 19.032,  $p = .004$ ), which indicates that at least one of the independent variables contributes to the prediction of the final course grade. Of all the independent variables, gender ( $B = 4.861$ ) and marital status ( $B = 4.032$ ) were found to be the

variables that had the greatest effect on the final course grade. Thus, the results suggest that for this group of graduate business students, men had a higher probability of earning an A grade than women. Married students were also more likely to succeed than the single students.

***Full regression model with exogenous variables.*** The last set of regression analysis procedures examined the effects of the full regression model with the exogenous variables, specifically real vs. expected experience, motivation, and belonging on the final course grade of the participants. The results of the logistic regression analysis are presented in Table 10. Based on the results of the omnibus test, the model was found to be statistically significant (Chi-square = 22.544,  $p = .007$ ). Using this model, gender ( $B = 5.674$ ,  $p = .008$ ) and marital status ( $B = 4.712$ ,  $p = .009$ ) were once again found to have statistically significant effects on the dependent variable, final course grade.

TABLE 9

*Results of Logistic Regression Analysis: Full Regression Model (Variables in the Equations)*

		B	S.E.	Wald	df	Sig.	Exp(B)
Step 1 <sup>a</sup>	CourseDesign	-.003	.031	.010	1	.921	.997
	Community	.017	.049	.117	1	.733	1.017
	Participation	-.871	.531	2.689	1	.101	.418
	Gender	1.581	.621	6.474	1	.011	4.861
	Marital Status	1.394	.564	6.106	1	.013	4.032
	Number of Online Course Completed	1.030	.585	3.100	1	.078	2.802
	Constant	1.278	1.592	.644	1	.422	.279
Tests				X <sup>2</sup>	df	p	
Overall Model evaluation							
Likelihood-ratio test				19.032	6	.004	
Goodness-of-fit test							
Hosmer & Lemeshow				5.512	8	.702	

a. Variable(s) entered on step 1: CourseDesign, Community, Dich\_ActPart, q61, q63, Dich\_Online\_CrsComp.

TABLE 10

*Results of Logistic Regression Analysis: Full Regression Model (With Exogenous Variables in the Equation)*

	B	S.E.	Wald	df	Sig.	Exp(B)
Step 1 <sup>a</sup>						
Course Design	-.022	.039	.318	1	.573	.978
Community Participation	-.015	.056	.069	1	.793	.986
RealExpected	-.849	.543	2.445	1	.118	.428
Motivation	.108	.074	2.138	1	.144	1.114
Belonging	-.029	.040	.534	1	.465	.971
Gender	.028	.065	.188	1	.665	1.029
Marital Status	1.736	.656	6.993	1	.008	5.674
Number of Online Course Completed	1.550	.596	6.766	1	.009	4.712
Constant	.759	.617	1.513	1	.219	2.137
Tests	-.683	1.711	.159	1	.690	.505
			X <sup>2</sup>	df	p	
Overall Model evaluation						
Likelihood-ratio test			22.544	9	.007	
Goodness-of-fit test						
Hosmer & Lemeshow			4.191	8	.893	

a. Variable(s) entered on step 1: CourseDesign, Community, Dich\_ActPart, RealExpected, Motivation, Belonging, q61, q63, Dich\_Online\_CrsComp.

## Summary

The aim of this study was to determine the relationship among course design, the sense of community, and achievement in web-based courses as quantified by the respondents' final course grade. Prior to conducting any analysis procedure, the data set was first analyzed to determine whether the assumptions required for the correlation and regression analyses were met. It was found that the data set violates the assumptions of normality. This assumption will be acknowledged in the next chapter as a limitation of the study results.

Due to the violation of the assumption of normality, a Spearman's correlation analysis for non-parametric data was conducted instead of the Pearson's correlation analysis to determine the relationships between final course grade and the study variables. It was found that significant positive relationships existed between final course grade and gender, marital status, and the number of online courses completed. Another correlation analysis taking into account all the study variables revealed no significant associations between the study variables (final course grade, course design, participation, and sense of community), including the exogenous variables (real vs. expected experience, motivation and belonging).

The results of the first logistic regression analysis led to the conclusion that course design had no significant effects on the final course grade. The results of the second and third sets of analysis indicated that among all the independent variables, including the exogenous variables, only gender and marital status had significant effects on the final course grade of the respondents. The implications of these results are discussed in the following chapter.

## Chapter V

### Discussion and Recommendations

The goal of this study was to gain insight into adult learners academic achievement in web-based courses. To accomplish this, I began with a review of the literature on adult distance learners. This review led to the course design literature which pointed to the online engagement and community literature. Each review offered a glimpse of possible indicators of academic achievement in the online environment. In addition the review offered some insight into possible relationships among various factors identified in the literature. Ultimately, the study was guided by the central question: *What are the relationships among course design, sense of community and achievement in web-based courses?*

As indicated in the proposed model shown in Appendix A, Figure A3, the adult web-based learner's academic achievement stems from the course design, their sense of community, and their participation level. In this study, academic achievement is measured by the learner's final course grade. The model also proposes that the learner's sense of community is shaped by particular entry characteristics and three exogenous factors. I hypothesized that a course design that promotes engagement will have a positive significant effect on a student's sense of community. I predicted that several entry characteristics will also have a direct effect on sense of community and that these entry characteristics, when coupled with positive perception of the course design, will foster a sense of community for the learner. This sense of community will lead to greater participation in the course and, subsequently, to a higher final course grade. I also predicted a reciprocal relationship between a learner's sense of community and participation.

I gathered survey data from graduate business students enrolled in online courses to investigate these relationships and to answer my overall research question and the subsequent questions that resulted from this line of inquiry. The data were analyzed using correlation and regression procedures. Each analysis provided clarity on the relationship among course design, sense of community and academic achievement for this group of graduate business online learners.

### **Interpretation of findings**

The major finding in this study was there is no significant relationship, direct or indirect, between course design and course grade. The best predictors of the final course grade for this group of participants were gender and marital status. At the macro level, these findings summarize the study. However, as one looks deeper, some interesting information is revealed. I will discuss each finding in relation to my research questions and the proposed model for this study

**Entry characteristics and sense of community.** I expected to see several of the entry characteristics having a significant effect on students' sense of community in the course. Yet, gender was the only variable that had a statistically significant relationship with the participants' sense of community. Within the context of this study, it would appear that in an online course female students are more likely to experience a sense of community than male students. This seems to support Spady's (1970) assertion that male students in general are less interested in the social aspect of learning than their female counterparts. The fact that no other entry characteristic variable was significantly related to sense of community suggests that sense of community is not innate to students. However, there may be some environmental elements that

help to foster a sense of community. Also, I was surprised by the finding that a few of the entry variables had an inverse relationship to the sense of community construct. For example, the more online experience and/or computer expertise students had, the lower their overall sense of community in the course. The literature regarding online community suggested that students who are experienced with the online environment tend to participate and contribute more to community efforts (Brown, 2001). However, with this group of participants that was not the case. Perhaps there were other mitigating factors, such as gender, that could explain this relationship.

**Entry characteristics and final course grade.** In the correlation analysis, gender along with marital status and the number of online courses completed were the only three entry variables statistically significantly related to final course grade. However, in the regression analysis, only gender and marital status had a significant effect on the final course grade. Although partially contradictory to Kember's (1995) findings, this finding was consistent with prior research on adult learners enrolled in online courses (Huston, 1997; Loomis, 2000; Mylona, 1998) in that the majority of the entry characteristics had no significant relationship with the final course grade. Prior studies concluded that entry characteristics were not predictors of success. However, in this study three of the 16 variables had a statistically significant relationship with the outcome variable. The male respondents in the study earned higher grades than the female respondents. This result is consistent with Spady's (1970) assertions that for males, academic achievement is more important than social interaction. It may also explain why the male students reported a lower sense of community than the female students.

The correlation and regression analyses also found that married students performed better academically than their single peers. The positive association of marital status on final course grade is consistent with another of Spady's (1970) assertions that students with no shared support from family and friends are less likely to succeed in their courses. It may be theorized that married students have more access to familial support in the form of their spouses and maybe computer savvy children. Given that these participants are adult learners, the participants who reported to be single may not have as much of support they need to succeed in distance education. In contrast to unmarried college age students who live within the community of the school (in dormitories, student apartments, or have an immediate circle of friends and classmates to provide support), unmarried adult learners may often carry the burden of schooling along with the other demands in their lives, such as their jobs.

Finally, the positive association between the number of online courses completed and the final course grade is consistent with the model of adult persistence in Internet-based distance courses proposed by Valasek (2001). Valasek stated that adult persistence and success in Internet-based distance courses is affected by students' expectations of the amount of time online classes demand. These expectations and skills would have been affected by previous experiences with online courses. This may be why those who have completed more online courses are more likely to have higher grades when compared to those who are taking online courses for the first time. First-time distance course learners may be overwhelmed by the conflicting demands of work, home and school, or may be unfamiliar with the tools needed to succeed academically in distance courses, such as the ability to use the computer and having the confidence to participate in online discussions (Brown, 2001). However, in the regression

analysis, the number of online courses completed did not significantly affect the final course grade. This indicates that, for this group of participants, gender and marital status were better predictors of the final course grade than the number of online courses completed.

**Course design and sense of community.** As stated earlier, the main independent variable in this study is course design and its direct or indirect relationship to the final course grade. I hypothesized that a positive perception of the course design coupled with a sense of community would increase the chances of earning an A grade in the course. I also expected to see a direct relationship between the course design and the final course grade. Contrary to Houle's (2004) findings that course design had a positive effect on the course grade, in this study, course design had no direct effect on the final course grade. Rather, it had a negative but statistically non-significant relationship. The negative non-significant relationship was unexpected and could be an area of interest for future studies. However, the fact that the results were non-significant could be attributed to the small sample of participants and the lack of variability in the outcome variable in this study. Or perhaps, this finding supports the general literature on achievement in distance courses that suggests online course design alone may not be a contributing variable for achievement (Murphy, 2000).

Caffarella and Merriam (2000) have argued that for adult learners learning is best achieved when the learners participate by interacting with their community, which in this case can be the immediate academic community to which they belong. The relationship between course design and the sense of community may be important in discussing the indirect relationship between course design and the final course grade, since interaction with their peers was found to be a chief determinant of academic performance for adult learners. A course

design which fosters interaction or a sense of community between the members of the class may have a more positive effect on the final course grade of the participants than a course design that does not have this component.

However, one must exercise caution in this area. While in this study the course design had a significant positive relationship with the sense of community and participation, the level of interaction with peers and teachers does not necessarily translate into positive academic performance. In fact, there were no statistically significant relationships among course design, sense of community, and course achievement. These results are contrary to commonly accepted thinking regarding adult learners, expressed by researchers such as Schwitzer et al., (2001) and Fenwick (2000). These researchers assert that adult learners want to feel connected and that this need for meaningful connections with their peers and instructors affects their academic performance. Schwitzer et al. (2001) also state that relationships with classmates can help distance learners cope with academic and institutional challenges.

Thus, it was surprising to see in this study that female respondents, who experienced a greater sense of community, had a lower probability of earning an A grade than the male respondents. However, Tinto (1993) argues that social integration can also result in negative academic performance. Brown and Bussert (2007) also state that although interaction can increase participation or engagement in the course, there is no guarantee that it will translate into good academic performance. Their study found that students in an information literacy course that used a social software site were more engaged than those who didn't use such a site, but there were no significant differences in learning gains between the two groups. The findings from this study support the possibility of no impact or a negative impact of social integration on

academic achievement. It also suggests that sense of community, however it evolves, may not be the most critical influence on academic achievement.

**Participation.** Just as sense of community does not translate into higher achievement for this group of participants, neither does the number of postings. I predicted that the higher the level of participation in an online course, the greater the probability of earning an A grade. Research has shown that students who are more engaged in online courses, as measured by the number of student postings, received higher grades than those who were less engaged (Holley, 2002; Miller, 2000). One study found that the strongest indicator of achievement in online courses was discussion board postings (Alstete & Beutell, 2004). However, as stated previously, engagement does not necessarily lead to higher grades, which is consistent with other studies of participation in a distance education course (Beaudoin, 2003). In this study, there was no statistically significant relationship between participation and the final course grade. It is possible that for this group of participants, the number of postings did not equate to learning or in-depth/ accurate analysis of a concept. Regardless of the number of postings, if the student's level of participation does not reflect a significant level of understanding of key course concepts, the student will not achieve a high grade.

**The exogenous constructs.** This final discussion addresses the relationships among the exogenous constructs (real vs. expected experience, motivation, and belonging), sense of community, and participation. As discussed previously, this analysis was necessary to understand the degree to which the course design affects students' sense of community and participation. The analysis conducted found statistically significant positive relationships among the sense of community, the real vs. expected experience, motivation, and belonging. This

indicates that the course design was not the only driver of sense of community for this group of graduate students and, of the four independent variables, real vs. expected experience had the greatest impact on the sense of community.

Valasek's (2001) findings suggest that successful online students are those with realistic expectations of the amount of time online classes demand. Kember's (1995) model identified factors that could hinder students' sense of community. Although those factors were not analyzed in this study, they could have played an indirect role in the participant's sense of community. For example, participants who registered for the online courses with realistic expectations could have foreseen the time commitment necessary to succeed in an online course and therefore planned accordingly. As a result, some of the external attributions identified in Kember's model (insufficient time, unexpected events, distraction, potential dropout) could have had a lesser impact on those participants and therefore led to their greater sense of community. Thus, the extent to which the course design is consistent with students' expectations is an important consideration for building a sense of community.

This finding supports Conrad's (2005) claim that offering students an opportunity to meet face-to-face at some point in the course allowed students to connect with fellow classmates and led to more satisfaction with the course design. In addition, the relationship among the sense of community, motivation, and belonging support Rovai's (2002) finding that the sense of community "attracts and retains learners" (p. 199) and that a sense of community is experienced by students when members have a sense of belonging. Distance education tends to develop a "weak integration of students into institutions" (Mylona, 1998, p. 50). However, for this study's group of graduate students, institutional support was present and may have contributed to their

overall sense of community in the course. The correlation analysis revealed a positive significant relationship between belonging and sense of community. The course design and institutional support may have provided conditions whereby the students became socially integrated with course and ultimately persisted in the course. This is in line with the literature that suggests institutional support and interaction affect retention (Mylona, 1998). However, support and interaction may have a positive effect on retention, but they do not necessarily translate into a higher probability of earning an A grade in an online graduate level business course.

Finally, I also examined the relationships among the exogenous constructs of real vs. expected experience, motivation, and belonging with participation. The analysis found no significant relationships between participation and these three exogenous constructs. These findings lead to the conclusion that the only driver for participation with this study's group of graduate students was the course design. This is not surprising because all of the courses had a minimum participation requirement.

### **Implications and Recommendations**

**Theoretical implications.** It would appear from the results of this study that the approach used to understand the course design and its effect on course achievement may not yield a comprehensive picture. There is still much unknown about the interactions among course design, sense of community, and academic achievement in a web-based course. The literature suggests that social interactions are important in the online environment. It also suggests that the Web 2.0 tools currently available allow for greater social interaction in the virtual learning environment. Social interactions are important because they promote learning and help build a

sense of community in the course. This study hypothesized a direct positive relationship between students' perceptions of the course design and their sense of community. The link between the course design and sense of community was consistent with the literature and the proposed hypothesis for the study. However, the link between the course design and learning remains ambiguous.

This study raises more questions than answers. Prior research has found a positive relationship between course design and student achievement. However, in this study the relationship was negative and statistically non-significant. Perhaps how one defines the elements of the course design is important. In this study, the elements of the course design were dialogue, support, interactive content, and control. Due to the small sample size of the study, an analysis of each element's direct contribution to academic achievement was not plausible. However, from a theoretical perspective, it is possible that certain individual elements of the course are better predictors of academic success than others. Identifying those elements that either support or hinder success may be important for online course design. This study also suggests that although social interactions may promote learning, one must also consider the methods used to assess the interactions. Given that the instructor assigns the grade, assessment procedures could be key factors when evaluating the course design. For example, the instructor determines the weight allocated to the various assignments in the course. If the discussion board postings are weighted less than other graded assignments, scoring high on discussions may not necessarily equate to a high grade in the course. It is not clear from this study what percentage of the course grade was allocated to non-collaborative tasks. Overall, this study's findings indicate that the structural components of the course design alone do not offer a clear link to student achievement.

One of the interesting findings of this study was the predictive role gender plays in academic achievement. Research on demographic indicators of success in the online environment has been inconclusive, particularly with regards to gender. Most studies have found no significant difference in the performance of male versus female students in online courses (Urtel, 2008). Yet, in this study the relationship between gender and the final course grade favored male students. The males in this study were also less interested in the social aspects of a course, as evidenced by their lower sense of community. One could theorize that for this group of participants the male students were less distracted by interactions in the course and subsequently performed better. However, this theory is not empirically supported in this study perhaps because there was no statistically significant relationship between sense of community and the final course grade. This is not to say that with a larger sample a significant relationship between community and final course grade would not be found.

**Implications and recommendations for practice.** In this time when distance education is fast becoming an important aspect of higher learning, adult learners are similarly becoming an integral market in the education industry. In line with this, educational institutions would benefit from an enriched understanding of the factors that affect the academic performance of adult distance learners. This in turn could help educational institutions identify areas in which they can better assist their distance learners, specifically in creating meaningful learning experiences by fostering a sense of community for the learners. For adult distance learners, a quality online experience is dependent on much more than the instructional content of the course. These students need to feel connected with the institution and their peers.

According to the Western Interstate Commission for Higher Education (2000), "Institutions' experience and research demonstrate that students' retention, completion, and satisfaction depend heavily on achieving a sense of connection with the institution" (p. 30). While this does not guarantee increased academic performance, it can provide a richer experience. It is also important to note that students' assessment of the level and quality of institutional support influences their interaction with the institution. This may be important since in this study, marital status was found to have a significant relationship with the final course grade, which may imply that support is a critical element for success in the online environment.

Marital status may be an overlooked dimension of success and, as such, there may be insufficient institutional support for the single graduate business online learner. Institutions seeking to improve online learners' course grades may find it necessary to offer requisite support to their single adult learners. If married students have a greater probability of success in online courses due to their spousal support, then it becomes important for student support staff and faculty to attain a better understanding of student's support needs based on their marital status. Administrators will have to determine what level of institutional support could compensate for differences in external support among online learners.

Like marital status, gender was also significantly related to the final course grade in this study. The male participants on average had a higher probability of earning an A grade than the female participants. Yet, in this study, there were more female participants than male, which is consistent with the literature on distance learner that indicates more women enroll in distance education than men (Moore, 1989; Thompson, 1998). Male academic success suggests that male students are more comfortable in the online setting. The male participants also reported a lower

sense of community, which may imply that they may have a lower need for social support to succeed academically.

This study also found a positive relationship between the number of online courses completed and final course grades. This information can be informative for institutions that are not experienced with the online delivery model. As noted previously, successful online students are those with realistic expectations of the amount of time online classes demand (Valasek, 2001). Students with experience in an online course may have more realistic expectations than the "first-time" online enrollee. First-time enrollees could be at a disadvantage without proper counsel and, should this be the case, more support may need to be provided to these learners. Inadequate support for the first-time online learner could have significant consequences for the institution in terms of students' satisfaction level with courses and, of course, students' academic success.

To prepare the first-time enrollee, institutions could provide an array of supports, supports that were not available to the participants in this study. For example, institutions could sponsor a variety of ongoing workshops for those interested in enrolling in online courses. Students who know beforehand the technical requirements and expectations of online courses are in a better position to make an informed decision about enrollment. Institutions could also require first-timers to attend mandatory orientations prior to enrollment. Orientations could expose students to the various tools used in online course delivery, verify that their hardware and software meet all of the system requirements for the course, and introduce them to the existing learning course management system and its features. Further, orientations could expose students to exercises that require them to (a) initiate and participate in a chat discussion, (b) initiate and

participate in a discussion thread, (c) initiate and participate in a video conference, and (d) download software. An orientation could articulate how and why various tools are used in each course and how they support the learning objectives of each course. This, of course, will require that faculty understand how various communication tools affect the teaching and learning process and articulate how the specific tools will help achieve the course's learning outcomes. Additionally, institutions could survey students in to determine the most effective way to reach and engage them. This information could help faculty identify the tools that would be most effective in their online courses.

The study's finding that fostering interaction does not result in increased academic performance is important in that it leaves one to question the value of online interactions from a learning outcome perspective. According to the literature, various forms of online interactions are thought to reduce students' feelings of isolation which ultimately improves their satisfaction level with the course. However, improving satisfaction levels is an insufficient course outcome within the broader context of student learning.

The literature also supports the notion that learning occurs through collaboration and negotiation of meaning (Wenger, 1998). This may be true, but in this study, these elements did not increase the probability of the participants earning an A grade. Making that transition from surface level interactions to negotiation of meaning among participants appears to be a bit arduous in practice. Each form of online interaction, defined in the literature as learner-content, learner-instructor, and learner-learner (Moore, 1989), has a different purpose. Aligning various forms of interactions with the proper course objective requires awareness by faculty and course designers of their specific contribution to the overall course outcome.

In this study, the outcome of interest was the final course grade. However, understanding the relationship between interactions and students' overall satisfaction with the course may also be important. As this study demonstrated, students who had a positive perception of the course design felt a greater sense of community. Greater sense of community typically translates into higher course satisfaction (Brown, 2001). Course satisfaction is important within the larger context of student retention and program sustainability. Setting up an effective online learning community is necessary in order to offer a meaningful online program. The faculty who deliver those courses play a critical role and thus should receive proper training on components such as classroom management software, and planning and management of the course. While this training is necessary for both online and traditional teaching, it is more critical for faculty teaching a hybrid course because of the technology component. In a hybrid environment, faculty must be more attentive to how they will enhance students' learning experience while ensuring that the technology does not become an obstacle to that experience. Thus, faculty should plan and design the structure of the hybrid course well in advance. Advance planning has a greater impact on student learning than other course considerations (Aycock, Garnham, & Kaleta, 2002).

Hybrid course planning is more complex than traditional course planning (Garnham & Kaleta, 2002). In addition to the typical classroom considerations, one must consider elements such as: how technology will be used, how the goals and objectives of the course should be achieved in this mixed model, how to present concepts and which concepts are more appropriate for each format (face-to-face session or online session), how to measure feedback and assess learning using technology, and how to measure class participation in a manner that reflects both its social and learning dimensions.

In conclusion, institutions have focused on building interactions in online courses as a way to enhance learning and to develop a sense of community among online learners. While these efforts should persist, other initiatives that are more attentive to gender, marital status, and the needs of the first-time online learner may also be necessary. The findings of this study and other similar studies encourage administrators and staff to assess their support services for the online learner and their approach to online course design.

**Implications and recommendations for research.** As briefly discussed previously, this study has a few inherent weaknesses that could have affected the results. These include the sample size and the academic calendar that was based on a 10-week quarter system. Future researchers might try to replicate this study with a larger participant sample and a longer school term to see whether the conclusions reached in this study hold true, or are only true in this context. Future researchers could also survey students enrolled in fully online programs to better evaluate the effects of the course design on their sense of community. It was unclear in this study what elements of course design led to students' sense of community. Research on how specific elements of the course design promote a sense of community in the hybrid and the fully online models would be of interest to administrators and faculty wanting to improve learner satisfaction and achievement.

This study also identified several concepts that might be of interest to future researchers. First, the model found that gender had a positive significant statistical relationship with final course grade, but a negative significant effect on the sense of community variable. This may be an area of interest for future studies. The fact that female participants in the study had a lower probability of earning an A grade but felt a greater sense of community than male participants

suggests a disconnect between bonding with classmates and academic success. If such a disconnect exists, it puts women at a disadvantage in distance education. Women, in general, have a greater need for interpersonal relationships than men. For many women, these interpersonal relationships allow for personal development and learning, whereas men prefer autonomy and are more likely to achieve in autonomous learning (Hayes & Smith, 1994). Distance education very much exemplifies autonomous learning. Thus, the question becomes: Were the women in this study putting too much emphasis on the social interactions in the course and less emphasis on the academic elements? If so, higher education administrators might determine how to promote a sense of community in their online courses in a manner that leads to academic success for their female learners.

Ultimately, one of the goals of distance education is to serve a diverse population. To do so requires an understanding of student's different needs and expectations. This study hints at a disconnect among gender, sense of community, and academic success. Additional research in this area will better inform administrators on how to structure their online courses to meet the needs of their diverse population. Researchers may also want to examine factors that encourage better academic performance for male adult learners as compared to female adult learners, and for married adult learners as opposed to unmarried adult learners.

Second, this study's findings differed from those of Palloff and Pratt (1999) regarding the relationship between the sense of community and learning. Accordingly, more in-depth studies might explore how sense of community leads to learning and if it actually translates into higher grades. It would appear from this study that sense of community is not a necessary element for academic achievement online. If researchers can clarify the link between sense of community

and academic achievement, they will provide valuable evidence for strengthening online course design and delivery. Future studies could also compare students' sense of community in the face-to-face, blended, and fully online course delivery models to determine the relationship between sense of community and achievement for each delivery model. Such data could help institutions better understand the value of interactions and feelings of belongingness in different educational models.

Third, numerous studies, such as those conducted by Scwitzer et al., (2001), have asserted that academic institutions should design courses that provide adult learners with the types of meaningful experiences and the level of interactions they need to succeed academically. In this study, courses were designed in a manner that fostered a sense of community, but this did not translate into academic success. The findings suggest that more studies are needed to identify course design factors that are directly related to academic achievement in adult learners. Such data would be important primarily because the quality of online courses is still debatable. Thus, if course designers can better align online course design and delivery to student outcomes, the quality of online courses may become less debatable. On the same note, much of the distance education model is reliant on web-based technology. It would be useful to see more studies that analyze how different web-based tools, such as wikis, blogs and webcast, and their usage directly impact the online learner's course achievement. From a retention perspective, this study could be replicated with a larger sample to examine the relationships among course design, sense of community, and retention, particularly since prior research has alluded that the feeling of isolation is a problem with online courses and can lead to dropout. Data on both persisters

and non-persisters would further enrich our understanding of the value of course embedded interactions for students in the online environment.

Fourth, this study could be replicated with undergraduate students. One could find greater variability in the undergraduate grade distributions than in the graduate grade distributions. Greater variability in the final course grades for this study could have provided a clearer picture of the relationship among the course design, sense of community, and the final course grade. An insight related to the idea of sampling undergraduate vs. graduate students is that this study was conducted exclusively with graduate business students. As noted previously, adult learners learn differently than the traditional college-age student. Consequently, undergraduate and graduate student assessment of the course design could be different. Additional research that examines the relationship among online course design, sense of community, and achievement for undergraduate students could help to better identify the differing pedagogical needs of graduate and undergraduate students. This research could be extended to include the non-traditional undergraduate online student as well. A comparative study of these two groups could yield interesting data for program development.

## **Conclusion**

This final chapter provided a short summary of the information discussed in the previous chapters of this dissertation. It provided an introduction to the context of the study, the research questions posed, the existing literature on the subject, the methodology used in the study, and the analysis of the data gathered during the study. This chapter summarized the findings of this study and discussed the significance and implications of these findings. It also identified avenues for further exploration. There is still much that is unknown about the relationship

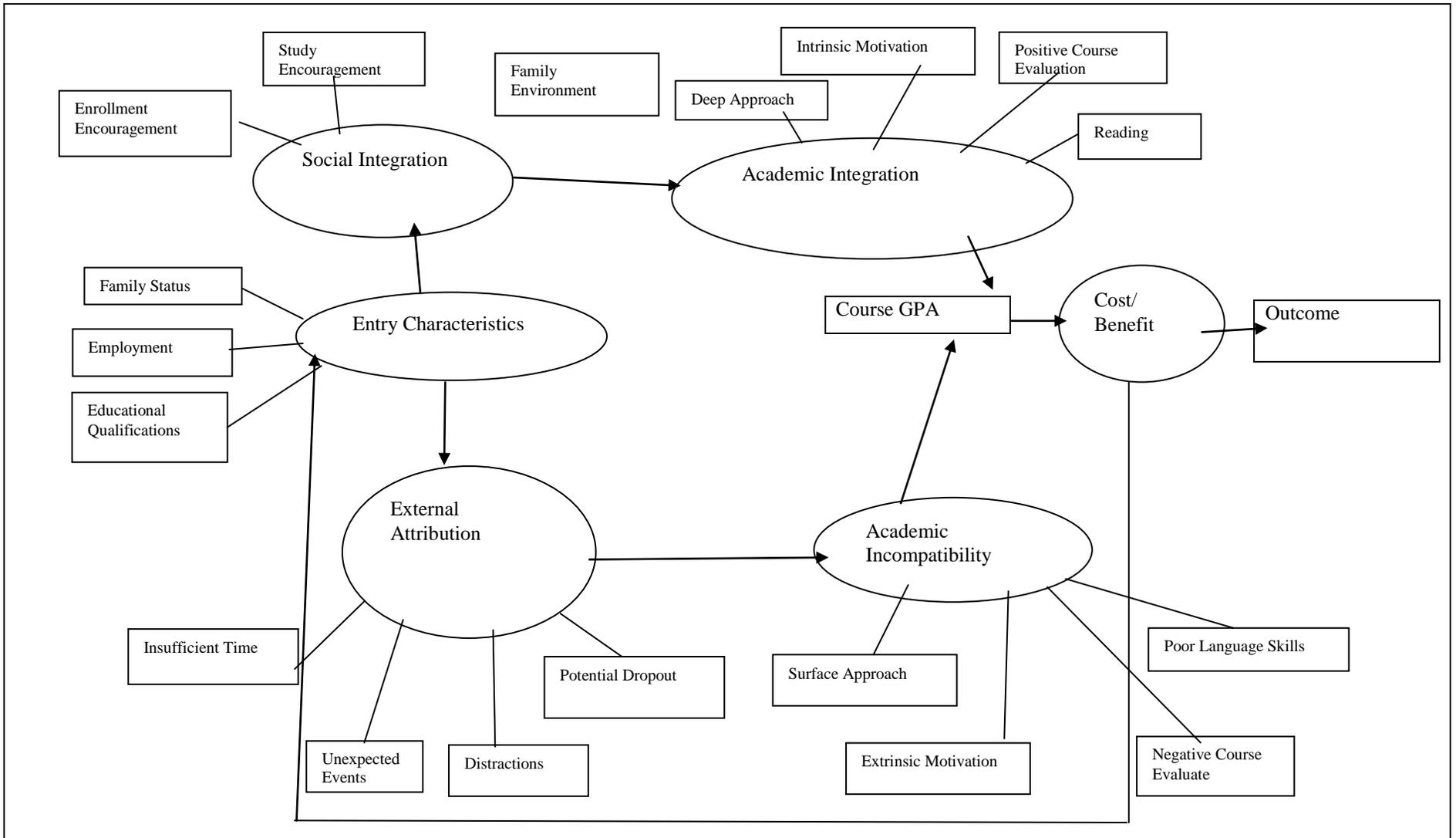
between online course design and the academic achievement of the adult distance learner. The tone in the literature implies a connection between the two variables, yet it is difficult to find empirical evidence for this.

This study, with its limitations, provides no evidence to support the claim that course embedded interactions promote academic success in online courses. However, it does raise additional questions about the value of a sense of community in achieving overall academic outcomes and the value of course embedded interactions for the online adult distance learner's academic success. In this study, although the course design had a significant effect on the sense of community for adult learners, it did not have a significant effect on students' grades. What is evident from this finding is that a sense of community may evolve from a variety of factors, one of which is the course design. The relevance of this for academic achievement, though, is inconclusive. Finally, the fact that participants' sense of community and academic achievement varied depending on their gender revealed the need for more research to better understand the interaction among these three variables with a larger and more diverse population.

## **Appendices**

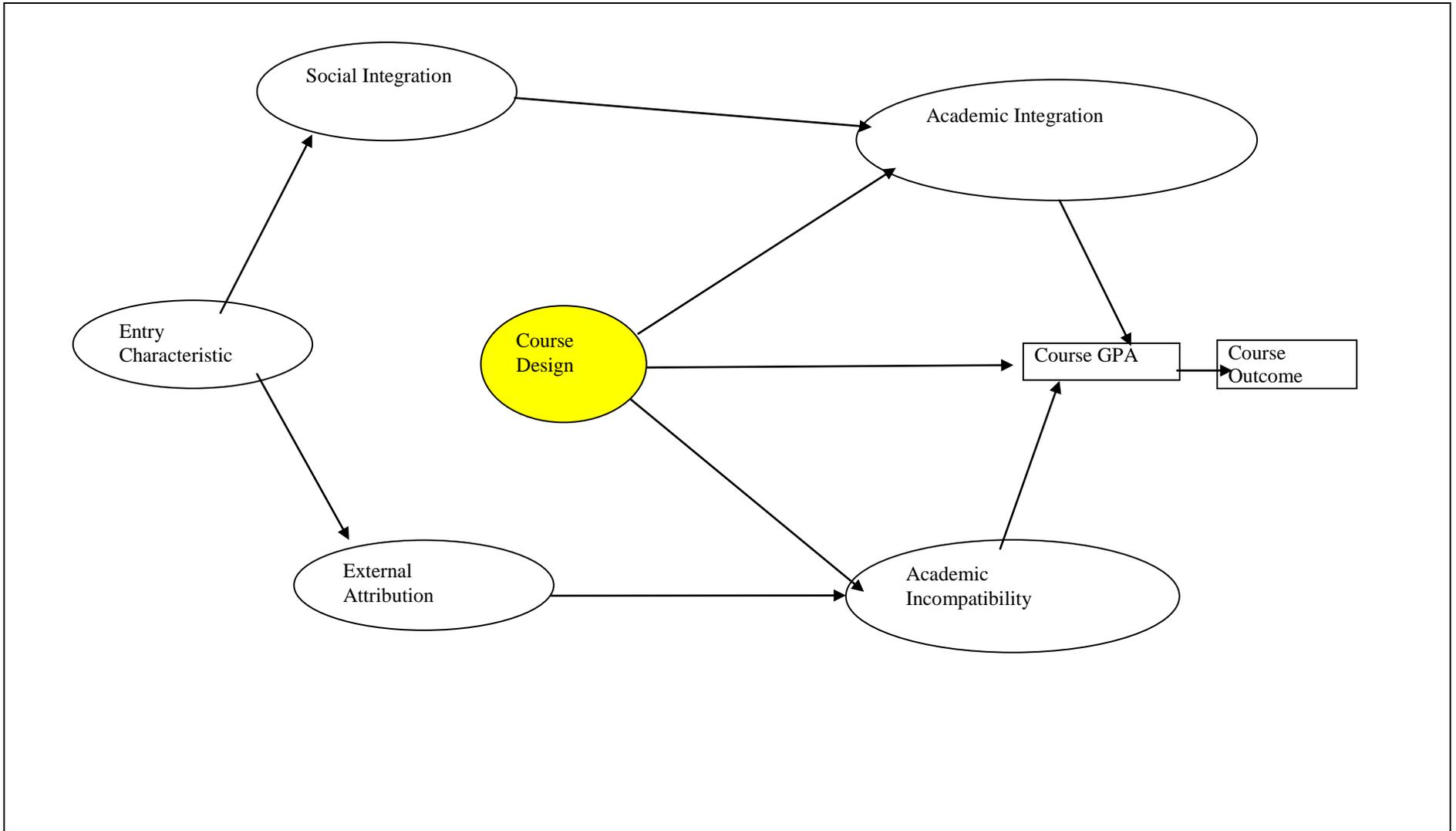
Appendix A

Figure A1: Kember's Model of Student Progress (1995)



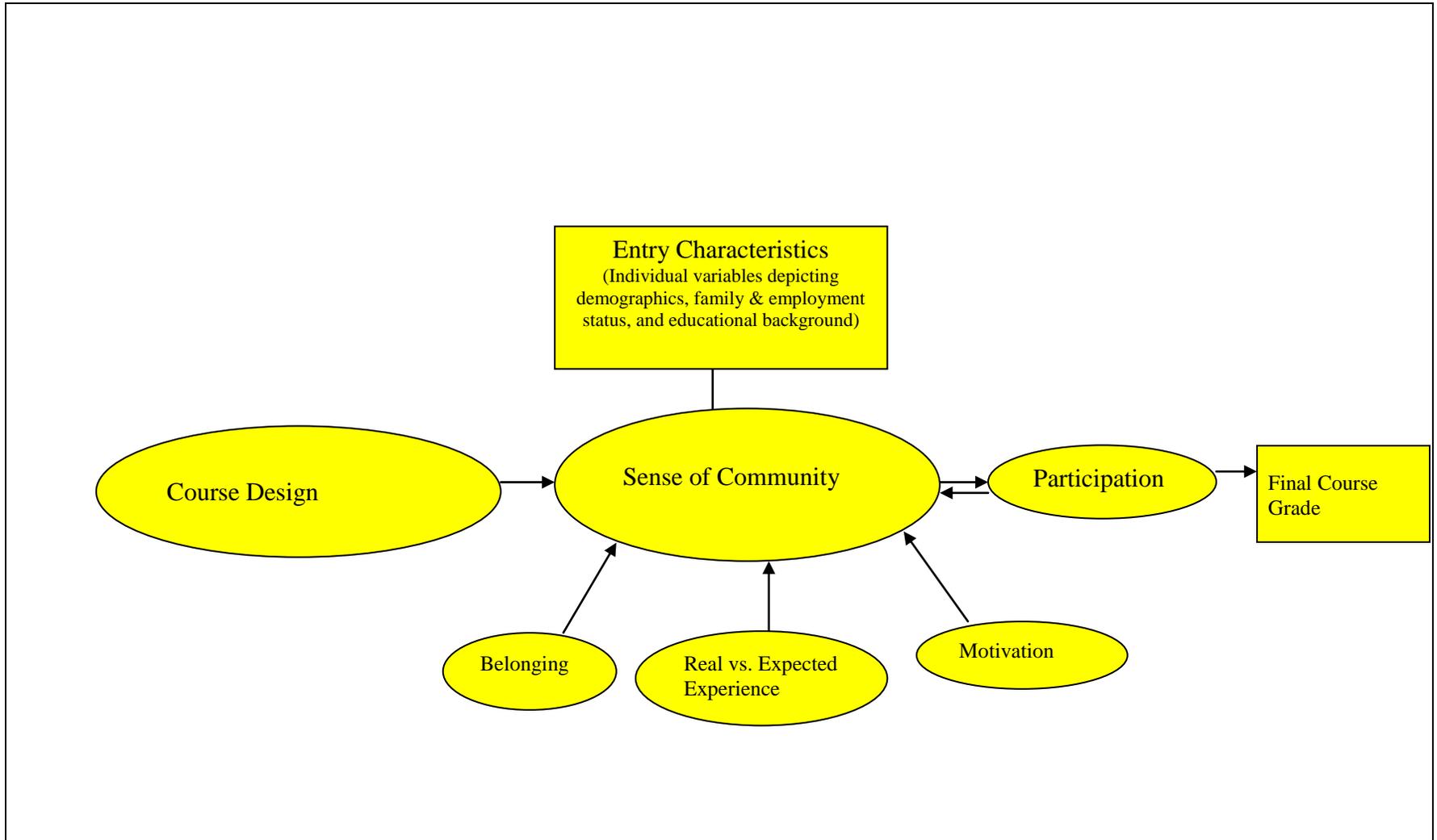
Appendix A

Figure A2: Houle's Revised Model



Appendix A

Figure A3: Analytical Model





## Appendix B

### The Survey Instrument (Organized by Construct)

#### Student Information

Name (Last, First) \_\_\_\_\_ e-mail address: \_\_\_\_\_

Please indicate the course for which you are completing this survey \_\_\_\_\_

Please indicate the number of face-to-face instructions in this course \_\_\_\_\_

What is your current grade in the course? \_\_\_\_\_

In general, where do you do most of your homework for this course?

Home \_\_\_\_\_ School \_\_\_\_\_ Work \_\_\_\_\_

How many courses are you currently taking (including this course)? One \_\_\_\_ two \_\_\_\_  
three \_\_\_\_ four \_\_\_\_

How many online courses are you currently taking (including this course)? One \_\_\_\_ two \_\_\_\_  
three \_\_\_\_

At any point in the quarter did you ever consider dropping this course? Yes \_\_\_\_ No \_\_\_\_

#### Course Feedback

Please provide feedback for the online course you specified in item #2 above.

Response scale for the following questions

Response Scale	
1	Strongly Disagree
2	Disagree
3	Agree
4	Strongly Agree

	1	2	3	4
<b>Course Design</b>				
<i>Dialogue</i>				
The course provides opportunities for online discussions with classmates.				
The course provides opportunities for online discussions with the instructor.				
The frequency of online discussions with instructor is appropriate for the course.				
The frequency of online discussions with classmates is appropriate for the course.				
Posting a question on the discussion board is required in this course.				
Students are encouraged to post introductions at the beginning of the course.				

<i>User-Friendly Interface</i>	1	2	3	4
The course provides varied opportunities to engage with course material.				
I am able to navigate through a variety of hyperlinked information.				
It was easy to use technology to participate in this course.				
The course is well organized.				
<i>Support</i>	1	2	3	4
The amount of feedback from the instructor on assignments and/or projects is appropriate for this course.				
The amount of feedback from classmates on assignments and/or projects is appropriate for this course.				
The instructor provides timely feedback and/or advice on assignments.				
I receive timely feedback from my classmates.				
In this course, students are required to comment on classmates' postings.				
The instructor is accessible to students.				
The number of resource materials or links available to students is appropriate for the course.				
<i>Control</i>	1	2	3	4
I am able to set my own personal goals within the generalized course goals.				
I am able to set my own deadlines for completing assignments and/or projects.				
I am able to select the projects and/or assignments I want to complete.				
Self-assessments are available for assignments.				
I am encouraged to find new sources of information in this course.				
I am encouraged to assume some ownership of the online discussions.				
<b>Participation</b>				
<i>Participation</i>	1	2	3	4
I participate in online discussions with my classmates.				
I participate in online discussions with my instructor.				
I provide substantive feedback to my classmates' postings.				

I provide timely feedback to members of this course.				
I use the available online resources in the course.				
On average, regardless of whether or not you post a message, how often do you access the course Web site each week?				
a. Once a week				
b. Twice a week				
c. Three times a week				
d. Four or more times a week				
One average, how often do you post a message to discussion board?				
a. Once a week				
b. Twice a week				
c. Three times a week				
d. Four or more times a week				
On average, how many hours per week do you devote to this course?				
a. five hours or less				
b. six to 10 hours				
c. ten to 15 hours				
d. 16 hours and above				
I used the following tools for my discussions in this course. (select all that applies)				
a. real-time chat				
b. discussion board				
c. e-mail				
d. all of the above				
<b>Sense of Community from Rovai, 2002)</b>				
<i>Connectedness</i>	1	2	3	4
I feel connected to others in this course.				
I feel confident that others will support me.				
I enjoy interacting with my classmates.				
I can speak openly in this course.				
I depend on members of this course.				
Members of this course depend on me.				
I trust others in this course.				
I am determined to complete this course.				

<i>Learning</i>	1	2	3	4
I am able to relate what I learn in the course to my personal circumstances.				
I received valuable feedback from my classmates.				
Online discussion boards are used in a way that helps me better understand the subject.				
The course forced me to think critically.				
My skills as a researcher are developing as a result of this course.				
The feedback I receive from my instructor helped me better understand the subject.				
Other students help me learn.				
This course promotes a desire to learn.				
<b>Sense of belonging to the college</b>				
At this college, beyond this on-line course				
I feel connected to others students.				
I feel connected to faculty.				
I feel I belong here.				
I feel the staff cares about me.				
I feel that I am part of a community here.				
There are other courses at this college that would provide me with the same learning opportunities as this on-line course.				
<b>Real vs. Expected experience</b>				
When compared with your expectations, how satisfied are you with the following aspects of the course? 4= very satisfied, 3=satisfied, 2= dissatisfied 1=very dissatisfied	1	2	3	4
a. The amount of interaction with classmates				
b. The quality of interaction with classmates				
c. The amount of interaction with instructor				
d. The quality of interaction with instructor				
e. The overall quality of the learning experience				
f. The ease with which you can navigate through the course				
g. The timing of feedback from the instructor				
h. The opportunity to control your own learning				
i. Sense of connection with classmates				
j. Sense of connection with the instructor				
<b>Motivation for continued enrollment</b>				

To what extent does each of the following contribute to your continued enrollment in the course? (4 = Contributes a lot, 3= Contributes, 2= Contributes a little, 1= Does not contribute)	1	2	3	4
a. The amount of interaction with classmates				
b. The quality of interaction with classmates				
c. The amount of interaction with instructor				
d. The quality of interaction with instructor				
e. The quality of the learning experience				
f. The opportunity to control my own learning				
g. The course is well organized				
h. The course is required for the degree				
i. The course is important for my career				
j. This is the most convenient term to complete the course				
k. Classmates depend on me				
l. My friends encourage me to stay enrolled				
m. My family encourage me to stay enrolled				
n. This on-line course is really the only option I have to complete my desired course of study.				

Section 2: Distance Education Student Progress Inventory (Kember, 1995) *modified for this study*

### Entry Characteristics

Age: \_\_\_\_\_

Gender: Male \_\_\_\_\_ Female \_\_\_\_\_

Ethnicity: Caucasian \_\_\_\_\_ African-American \_\_\_\_\_ Asian \_\_\_\_\_ Hispanic \_\_\_\_\_ other \_\_\_\_\_

Marital status: Single \_\_\_\_\_ Married \_\_\_\_\_

Number of people living in your home (including yourself):

one \_\_\_\_\_ two \_\_\_\_\_ three-five \_\_\_\_\_ six-ten \_\_\_\_\_ more than ten \_\_\_\_\_

How many children do you have?

None \_\_\_\_\_ one \_\_\_\_\_ two \_\_\_\_\_ three \_\_\_\_\_ four or more \_\_\_\_\_

Are you currently employed? Yes \_\_\_\_\_ No \_\_\_\_\_

On average, how many hours do you work per week? \_\_\_\_\_ hours

Number of credits completed in this program: \_\_\_\_\_ credits

Current grade point average in the program on a 4.0 scale \_\_\_\_\_

Number of online courses completed at this college:

None \_\_\_\_\_ one \_\_\_\_\_ two \_\_\_\_\_ three or more \_\_\_\_\_

I would rate my level of computer expertise as: Novice \_\_\_\_\_ Intermediate \_\_\_\_\_ Expert \_\_\_\_\_

I would rate my prior knowledge about this subject: Novice \_\_\_\_\_ Intermediate \_\_\_\_\_

Expert \_\_\_\_\_

## Appendix C

### Synopsis

#### The Relationships Among Course Design, Sense of Community, and Adult Student Persistence in Web-based Courses

A study by Monique Herard, doctoral candidate at the University of Illinois at Chicago

#### **Introduction:**

My name is Monique Herard. I am a doctoral candidate in the College of Education at the University of Illinois at Chicago. You may contact me with any questions by e-mail [mherard@xxx.xxx](mailto:mherard@xxx.xxx) or by phone 000-000-0000.

#### **Purpose:**

The purpose of my dissertation study is to investigate the relationship among course design, sense of community, and adult student persistence in web-based courses. The goal is to conduct a voluntary online survey of students enrolled in an online graduate business course.

#### **Criteria for selecting the institutions and participants:**

The institution for this study must 1) be a four-year private higher education institution located in the Midwest, and 2) has online degree programs that cater to the needs of the nontraditional adult learner. Participants for the study must 1) have a degree objective; by degree objective, I mean students who are enrolled in a degree program with the intent to graduate, and 2) be enrolled in an online graduate business course.

#### **Data collection procedures:**

Participants in this study will complete a survey regarding their experience in an online course. They will evaluate specific elements of the course, their participation level, their sense of connectedness, and their learning. In addition, they will provide some demographic information. I will ask participants to provide their first and last name, in order to pair their survey response with their course completion data. The course completion data is simply an indication of whether or not the participant completed the course. I will obtain the course completion data from the instructor or a department designee. After I receive the completed surveys, I will recode the data by assigning each participant a unique random number and delete the names from the source data. I will, however, retain the participants names and their corresponding number in a separate document. The reasoning for retaining the participants names is to link the survey responses with the corresponding course outcome data (completion or withdrawal). The survey should take approximately 15 minutes or less to complete. The numerical identifiers will remain as the only identifier for the data until the term is complete and course completion data is submitted. During that time, I will store the data in a secure location. I will analyze and report the data collected in my dissertation and will make my research findings available to all participants upon request.

**Appendix C (Continued)****Risk and benefits:**

The possibility of breach of confidentiality is the only identifiable risk in this study and I will take all the necessary measures to minimize this risk. All information collected will be held in strictest confidence and will be reported only as an aggregate of all data collected. As stated previously, I will delete all identifiers from the data upon receipt of the course completion data. In addition, I will use a pseudonym for the institution. While there are no direct benefits, participants who submit a completed survey by the deadline will have their number included in a drawing for one of two \$50 American Express gift cards. Participants in this study will contribute to a greater understanding of how online course design and sense of community affects a student's decision to persist and will hopefully assist in refining the online course designs at the institution.

## Appendix D

### Informed Consent to Participate in Study—Electronic Format

You are invited to participate in a research study about online course design and student retention. You were selected as a possible participant because as a graduate business student enrolled in an online course, you are in a unique position to inform the questions asked in this study. While there are no direct benefits for your participation, if you submit a completed survey by the deadline, your number will be included in a drawing for one of two \$50 American Express gift cards. The survey should take no more than 15 minutes to complete. Please read the information below and ask any questions you may have before agreeing to take part in this study.

The purpose of the study is to examine how specific elements of an online course affects students' participation level, sense of community, and subsequently their decision to persist in the course. As a participant of this study, you will complete a survey regarding your experience in an online course and provide some demographic information. Please be assured that your responses will be held in the strictest confidence and the information provided will be reported as an aggregate of all data collected.

I will take the following steps to minimize the risk of breach of confidentiality: ***Upon receipt of your completed survey, I will assign you a unique numerical identifier and will delete your name from the source data. I will secure the data in a password protected file.*** Once I have paired the survey responses with the course completion data, I will delete all identifiers from the data. NOTE: ***To be eligible for the drawing, I must retain your contact information (e-mail address) in the event that you are the winner. Once the winners are identified and contacted (no later than week 1 of the subsequent quarter), I will delete the contact information.***

Your participation in this study is voluntary and you have the right to terminate your involvement at any time, for any reason. Your decision whether or not to participate will not affect your current or future relations with the institution. Your cooperation is greatly appreciated.

**Thank you for your time.**

#### **Contacts and Questions:**

If you should have questions about your rights as a research participant, you may contact UIC's IRB at 312-996-1711 or at uicirb@uic.edu.

If you should have any questions regarding the survey, please feel free to e-mail me at [mherard@xxx.xxx](mailto:mherard@xxx.xxx) or call me at 000-000-0000. You may also contact Celina Sima, Ph.D., Faculty Sponsor, by phone 000-000-0000 or e-mail: [celinas@xxx.xxx](mailto:celinas@xxx.xxx).

I have read the above information. **I am acknowledging my consent to participate in the study by completing and submitting the survey. I understand this will not affect or benefit me in any way. I also understand none of the information will be used to identify me as an individual. It will be reported in aggregate form only.**

Please print a copy of this form for your records.  
**Click on this link <" "> to access the survey.**

## Appendix E

### Informed Consent to Participate in Study—Paper Format

You are invited to participate in a research study about online course design and student retention. You were selected as a possible participant because as a graduate business student enrolled in an online course, you are in a unique position to inform the questions asked in this study. While there are no direct benefits for your participation, if you submit a completed survey by the deadline, your number will be included in a drawing for one of two \$50 American Express gift cards. The survey should take no more than 15 minutes to complete. Please read the information below and ask any questions you may have before agreeing to be in the study.

The purpose of the study is to examine how specific elements of an online course affects students' participation level, sense of community, and subsequently their decision to persist in the course. As a participant of this study, you will complete a survey regarding your experience in an online course and provide some demographic information. Please be assured that your responses will be held in the strictest confidence and the information provided will be reported as an aggregate of all data collected.

I will take the following steps to minimize the risk of breach of confidentiality: ***Upon receipt of your completed survey, I will assign you a unique numerical identifier and will delete your name from the source data. I will secure the data in a locked file, accessible on by me.*** Once I have paired the survey responses with the course completion data, I will delete all identifiers from the data. NOTE: ***To be eligible for the drawing, I must retain your contact information (e-mail address) in the event that you are a winner. Once the winners are identified and contacted (no later than week 1 of the subsequent quarter), I will delete the contact information.***

Your participation in this study is voluntary and you have the right to terminate your involvement at any time, for any reason. Your decision whether or not to participate will not affect your current or future relations with the institution. Your cooperation is greatly appreciated.

Thank you for your time.

#### **Contacts and Questions:**

If you should have questions about your rights as a research participant, you may contact UIC's IRB at 312-996-1711 or at uicirb@uic.edu.

If you should have any questions regarding the survey, please feel free to e-mail me at [mherard@xxx.xxx](mailto:mherard@xxx.xxx) or call me at 000-000-0000. You may also contact Celina Sima, Ph.D., Faculty Sponsor, by phone 000-000-0000 or e-mail: celinas@xxx.xxx.

#### **Statement of Consent:**

I have read the above information. I have asked questions and have received answers. I consent to participate in the study. **I understand this will not affect or benefit me in any way. I also understand none of the information will be used to identify me as an individual. It will be reported in aggregate form only.**

**Appendix E (Continued)**

Signature: \_\_\_\_\_ Date: \_\_\_\_\_  
Signature of Investigator or Person Obtaining Consent \_\_\_\_\_ Date \_\_\_\_\_

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