A COMPARISON OF STUDENT PERCEPTIONS REGARDING ONLINE COURSES AND TRADITIONAL COURSES: A CASE STUDY

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Dedication

This dissertation is dedicated to:

my wife

Carol Anne Gottwald

whose unwavering support, perseverance, and love even when she faced very trying

situations regarding her own health, kept me on the right path;

My sons and their families

Don, Pam, Alex, and Adam

John, Caroline, Ryan, Preston, and Max

My daughters and their families

Denise, Bob, and Fiona

Michele and Brian

My mother Frieda

My brother Randy and his family

My sisters Heidi and Eva and their families

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Chapter 1

INTRODUCTION TO THE STUDY

Statement of the Problem

Distance learning for business on the graduate level has evolved to serve a population comprised largely of working adults. In the last decade, with the growth of Internet technology, both graduate and undergraduate business students have gained unprecedented access to business curricula using a variety of instructional delivery systems offered by educational institutions. Much has been written about the trend toward on-line learning in business by scholars, major employers of business school graduates, and business school administrators and faculty members. However, a major stakeholder in this trend has not been the focus of research – the students themselves. A paucity of well-designed research has been published that addresses student perceptions of the viability of on-line learning as compared with traditional classroom-based learning. Education planners and administrators have a growing need for student feedback as they consider the use of new technologies and investment their institutions will make in these technologies.

This study investigated business students' perceptions of on-line courses compared with classroom-based courses and their learning experiences in these two environments. In addition, the study examined effects of gender and other demographic variables on their on-line learning experiences.

Background of the Problem

The shift from classroom-based learning in traditional business programs and from correspondence-based methods in other business schools to on-line courses has not been universal, but appears across a broad continuum of attempts to integrate the

Web into business education (McLoughlin, 2000). At one end of the continuum, students may have access to their instructors via e-mail and to the school library's catalogue. Further along the continuum, students may be using Web-based chat rooms or bulletin boards to communicate with other students or with instructor-moderators. In addition, they may be able to access test results, assignments, and/or resource lists. At the extreme end of the continuum, entire courses or programs may be presented on-line, including lectures, real-time discussions, examinations, and receiving and submitting assignments.

In some schools, the Internet and other technologies are being integrated at the institutional level; with a student's complete academic experience – from application through registration and tuition payment, to final examination and course grade – occurring on-line. At other schools, technologies may have been integrated into individual courses or entire programs as adjuncts to traditional classroom-based learning. It is difficult to generalize about the extent to which American business schools are using the Internet and other technologies to deliver instruction because each institution is proceeding at a different rate, with different objectives, and with different technological capabilities. What is generally true, however, is that the nation's business schools are considering how best to use the Web to enhance teaching and learning and increase their market share in terms of student enrollment. Much of the existing research has been conducted to support institutional decisions about the degree to which investment in the necessary technological infrastructure is warranted by students' interest in this method of learning.

The theoretical basis of research in this field is to be found within the framework of adult learning, or *andragogy*, as developed by Knowles in the late 1960s (Rachal,

2002). Knowles argued that the ways in which adults learn and prefer to learn differ markedly from the ways that children learn, because of the influence of adults' life experience, their need to direct their learning and practical application of it, their problem-focused approach to learning, and their inner motivation (Knowles as cited in Bartz & Calabrese, 1991).

In the decades since Knowles' work, educators and scholars have moved from an andragogy versus pedagogy perspective toward a continuum that is bracketed by teacher-centered learning and student-centered learning. Merriam (2001) noted that the factor of the learning context has come to dominate more recent conceptual approaches to learning, encompassing what students bring to learning situations, how societal norms influence the structure of education, and physical, as well as virtual, environments in which students learn.

A further development in the conceptual basis of adult learning has come from research on *learning styles* (Kolb as cited in Loo, 2002), which has roots in research on experiential learning (i.e., learning by doing) and is considered relevant to adult learning. Kolb's Learning Styles Inventory, the instrument he developed for use in assessing the model in individual learners, has become popular among training professionals and others involved in adult education, but has had less application in the field of traditional business education. Studies have not been published that examined learning styles in the on-line environment (Loo, 2002).

Classroom environments are traditionally instructor-centered, with teacher and student roles defined: the teacher is the source of knowledge and its transmitter; the student is the "blank slate" that receives the knowledge transmitted by the teacher. This process of *knowledge transfer* is a one-way process, usually embodied by the

traditional lecture or assignment of reading materials (Knowlton, 2000). By contrast, in student-centered learning environments, students are responsible for knowledge acquisition and understanding, and for finding and evaluating sources of that knowledge. In this learning environment, the instructor adopts the role of guide, mentor, and coach in a more complex, multi-directional communication process. Knowlton (2000) and McLoughlin (2002) were among researchers who asserted that a student-centered learning environment was readily adaptable to on-line learning. Their reasoning was the technology supported the kind of collaboration and communication necessary between students, between student and instructor, and between student and knowledge sources beyond classroom walls.

As might be expected, the student-centered approach has encountered resistance in some traditional learning institutions, primarily from faculty members. Knowlton (2000) and McLoughlin (2002) argued that the traditional approach was working and could be expected to continue to work, with technology integrated into traditional teaching methods without changing those methods. Knowlton (2000) suggested that faculty members' real objection was that a student-centered learning environment, particularly an on-line environment, could mean that instructors no longer "teach" as they know it. Regarding the technology integration, Knowlton asserted that this criticism was an attempt to save traditional institutions the expense of creating and sustaining a student-centered learning context supported by technology. A more positive view was the instructor's role in shaping courses and leading students to needed resources. In shaping on-line courses, instructors use the same objectives and standards that they provide for traditional courses, as well as the means of evaluating students' work (Knowlton, 2000; Prestera & Moller, 2001).

In an on-line learning environment, the instructor has a variety of facilitative roles. Instructors guide students, for example, through the on-line environment and available tools by supporting students' collaboration, communications and interactions with each other. In addition, instructors are mentors in the sense that they establish the norms by which on-line courses are conducted. They also act as catalysts in supporting student's interactions with each other, with on-line resources, and with their instructors. Providing feedback to students is part of instructors' coaching role, as is encouraging and directing them to become successful students. Instructors also act as evaluators of students' interactions and contributions in a process distinctly different from grading traditional tests, papers, and presentations. The process through which students produce course outputs is central to the student-centered on-line context, so instructors are not looking for "right" or "wrong" answers, but for critical thinking, problem solving, reasoning, decision making, and collaboration with others. In addition, the instructor role in this context is a provider of, and guide to, resources available on-line, that can help students develop search skills, find and evaluate Internet sources independently, and connect with appropriate groups and individuals to enhance their learning.

The study of students' perceptions of on-line learning is in the early stages, as researchers are continuing to experiment with methodological approaches and attempting to identify the most salient variables. The earliest research efforts were little more than informal course evaluations, rather than rigorous studies, with current research continuing to use a survey method. Sullivan (2001), for example, surveyed student attitudes toward on-line learning by adding questions onto an existing course evaluation. He asked, "Is there anything about the on-line classroom that has made it

easier for you to learn, achieve your academic goals, or participate in class discussions (as compared to a traditional classroom)?" and "Is there anything that has made it harder?" (p. 806). Because these open-ended questions included a wide range of possible variables that were not explored in detail elsewhere in the survey, results were generally inconclusive. Still, suggestions, even in results of these types of surveys, point to future research possibilities. Sullivan (2001) found that students were positive about the flexibility of on-line learning and negative about the lack of interaction with instructors and peers, with similar results also found by Beard and Harter (2002).

Among research articles published on students' responses to on-line or technologically-supported learning in general, little has appeared that specifically examines gender differences in students' perceptions of course delivery methods or the quality of these methods. Sullivan (2000) offered analysis of gender influences as part of his study only because gender was included in the demographic data collected in the larger survey. Faced with the need to account for differences between male and female students' general perceptions of on-line courses, Sullivan suggested that women may find on-line classrooms more comfortable than traditional classrooms because male discourse was less likely to dominate in these types of classes. In an attempt to evaluate the finding that women expressed negative views about the self-directed nature of on-line learning, Sullivan conjectured that women were not accustomed to working independently. Neither suggestion was explored in the survey from which Sullivan's data were drawn, so the overall inference regarding gender differences is vague and inconclusive.

Overall, studies of student satisfaction with on-line learning have been plagued with methodological issues. Kendall (2001), for example, compared students' perceptions of a course in which traditional classroom teaching was combined with on-line resource materials, but was unable to distinguish between students' responses to the technological and the instructional quality of the course delivery method. Anderson, Banks, and Leary (2002) had similar difficulty with their study that compared student responses to a traditional classroom lecture-discussion and the same lecture-discussion delivered by interactive television to a remote site. Again, students' responses were ambiguous, because their perceptions of the lecture's instructional quality and of the course delivery method were muddled. The study design prevented researchers from exploring this problem, providing further evidence that the complexity of perceptions requires a similar level of complexity in study design and implementation.

Exploratory studies that have attempted to judge student satisfaction with technologically-supported on-line learning in advance of major investments in such programs have generally found that satisfaction levels were the same. This "no difference" finding has been replicated by researchers with a variety of research objectives. As expected, student outcomes have become increasingly important to researchers exploring the effects of on-line learning. Bearden, Robinson, and Deis (2002), for example, found that dental hygiene students had comparable outcomes on institutional or national examinations regardless of whether they completed traditional or on-line courses. Studies often are designed to support institutional objectives rather than investigate those aspects of on-line courses and programs that contribute to students' achievement and satisfaction.

If studies are too general to yield useful results, they are often too tightly focused to be applicable to research with broader objectives or with a focus on different variables. Studies conducted by Woods and Keeler (2001) and Woods (2002) are examples of an extremely tightly-focused research effort. In each case, researchers investigated effects of different types and lengths of e-mail messages on students' participation in on-line learning and perceptions of their relationships with instructors. Despite an extremely intricate set of research designs, and data analysis that involved counting messages and words in messages, no statistically significant differences were found in students' perceptions of their relationship with their instructors, their sense of community, or their overall satisfaction with the course.

Difficulties experienced by Woods and Keeler (2001) in interpreting their findings have highlighted the importance of variables involved in student participation in on-line learning. As these researchers found, they were unable to describe what constitutes a satisfactory group dynamic in an on-line course. They had difficulty in differentiating characteristics of instructors' participation that influenced students' perceptions and contributed to effects of variables, such as gender and age. This group of studies, despite their flaws, underscores the importance of student-instructor interaction on participation and overall satisfaction.

Jung, Choi, Lim, and Leem (2002) confirmed that satisfaction with on-line learning increased when students completed courses requiring high degrees of collaboration with other students and interaction with instructors, and when those expectations were made clear by instructors at the outset of the courses. Peer collaboration was shown to be a slightly stronger influence than instructor interaction, although this finding could not be explained. Jung et al. (2002) concluded that students

who benefited from peer collaboration were more likely to rate courses as more satisfactory because they had participated more actively, although this particular study had not addressed that issue.

Studies of on-line business education courses reflected the same characteristics of studies of on-line learning in general; that is, they ranged from the very general to the very tightly-focused. Among the general research that looked at "fringe" aspects of on-line learning, is the work of DeSanctis and Sheppard (1999). They published an overview of one Duke University MBA program designed for international executives. This program included residential segments in various locations and was supported by a range of other technologically-supported learning experiences in highly varied combinations of high-tech and traditional approaches. The authors concluded that the sheer variety of course delivery methods was the reason for the program's success.

At the tightly-focused end of the continuum, Basile and D'Aquila (2002) completed their research using a single course in financial accounting. This study was one of the "no difference" studies, with findings indicating that students who completed the accounting course in a traditional classroom setting and those who completed the same course on-line had essentially the same perceptions about the course. The only differences were related to the teaching style of the instructor and participants' computer experiences. These differences indicated that salient variables in the study of student perceptions could only be identified in study results.

A growing number of studies focused on single classes, which may be a strong methodological trend or simply a reflection of the convenience of these samples and the ability to control variables within them. Watters (2000) used a single class in

accounting to compare students' evaluations of traditional and computer-supported teaching within the framework of a single project. The distinguishing feature of this study was that all students in the sample experienced *both* instructional methods. This feature allowed variables measuring influence of perceptions on students' learning experiences on their expectations and previous academic experiences to be considered. No strong preferences were found for either method, thus the study belongs in the "no difference" research category.

A long-term study by Gray and Salmon (1999) drew on data from two years' of experience gathered from students of the Open University Business School of the United Kingdom (UK) who participated in computer conferences at the school. In addition to collecting students' perceptions of the computer-supported delivery method and their satisfaction with it, they were able to correlate these responses with various adjustments to the program that were made as a result of students' feedback.

Cheung and Kan (2002) used academic achievement as the primary variable in a study targeting business students. This study considered gender and age as factors influencing academic achievement. They found that women's achievement was higher than men's achievement in a business communications course, but they were unable to account for the difference. This study is representative of the treatment that age and gender have received as salient variables in academic literature.

Purpose of the Study

The purpose of this study was to examine students' perceptions of on-line courses in bachelor and masters of business administration programs at a private business college to determine if relationships exist in their perceptions of their preparedness for the on-line course delivery experience, the viability of on-line courses

compared with traditional classroom-based courses, and their overall satisfaction levels with the on-line experience. In addition, the study examined the influence of demographic variables, such as gender, age, socioeconomic level, and employment status, on students' perceptions of preparedness and viability and on their overall satisfaction levels.

Research Questions

The primary research question that the current study addressed was:

To what extent do students involved in on-line learning perceive that this method of course delivery is a viable alternative to traditional classroom delivery?

In addition, the following research questions were asked in support of the primary question:

Question 1: To what extent do students perceive that they were adequately prepared to complete coursework using an on-line instructional delivery system?

Question 1a: Is there a difference in male and female students' perceptions regarding their preparation to complete coursework using an on-line instructional delivery system?

Question 1b: Is there a difference in students' perceptions regarding their preparation to complete coursework using an on-line instructional delivery system relative to their age?

Question 1c: Is there an interaction effect in students' perceptions regarding their preparation to complete coursework using an on-line instructional delivery system relative to their gender and age?

Question 2: Is there a difference in perceptions of on-line coursework between students who completed their coursework on-line and those who completed their coursework in a traditional course?

Significance of the Study

Research into the effectiveness of on-line learning and student satisfaction is experiencing growth in terms of methodological quality and identification of important

variables. As this field of study continues to develop within the larger framework of research being conducted on the viability of on-line learning, study of effectiveness and satisfaction may result in improved instructional delivery. Models of distance teaching and learning continue to develop as part of a larger national effort of school reform at all levels. The use of technologically-supported learning is becoming more attractive to college administrators and boards as a cost effective method of providing coursework to a wider audience in accelerated instructional formats.

The creation of a learning community is a lofty goal for any educational institution, with the interaction made possible in on-line environments providing a solid basis for such a community (Bober & Dennen, 2001). Moore (as cited in Huang, 2002), a major contributor of a conceptual model for on-line instruction, defined three dimensions of the instructional process: interactions, course structure, and autonomy. Studies to date have found that interactions between students and instructors have a significant influence on student satisfaction and perceptions regarding the quality of instruction and on-line learning. In Moore's view, interactions between students and peers can be a substantive contributor to the satisfaction equation. Learner interaction with the course content, particularly when delivered on-line, is a critical element, as this interaction is important to student-centered learning. The dimension of the course structure has substantial effects on the depth and degree of student-instructor and student-student interactions, and on the extent of control and autonomy that learners experience in the on-line context. The third dimension, autonomy, is necessary in success of on-line learning and is directly related to the other two dimensions in Moore's model. To promote student satisfaction; interactions, course structure, and autonomy need to be considered when designing on-line learning programs.

The present study can contribute to developing literature on on-line adult learning models by investigating student perceptions of differences between traditional classroom-based and on-line learning within a business school context. By conducting this research within the setting of a single business school, information relating to the instructional design model used by the school to structure on-line courses, determining student and faculty roles in on-line coursework, and examining resources available to students through electronic means beyond the college can be understood. Choices made by the institution regarding the use of technologically-based instruction can be tested by the present study, particularly as it is focused on student perceptions with the on-line learning experience.

Researchers have strongly urged that examination of student behavior and performance in technologically-supported learning contexts need to be explored (e.g., Gery, 2001; Lock, 2002). They indicated that students may lack the technical expertise to benefit from this kind of learning. The present study can provide information about the influence of students' expertise on their perceptions and satisfaction with their on-line coursework. Student perceptions may be of value to college administrators and board members in analyzing and decision making with regard to which instructional methods and areas of the instructional process should be supported with technology. In particular, the role of the faculty and their means of interacting with students in an on-line environment is important to the design of on-line courses and programs. Results of this study can contribute to clarifying faculty roles and their influence in an on-line environment. Educators and administrators need empirical data on which to base curricular decisions, investments in technologically-supported education, and design of on-line learning courses and programs.

Assumptions

The following assumptions are made for this study:

- The present study assumes that on-line learning cannot proceed effectively without instructors; to the contrary, the role of the instructor in the on-line environment is seen as more critical than ever to students' participation.

- Students have appropriate skills and background necessary to participate in coursework presented in an on-line environment.

- The quality of coursework in terms of knowledge acquisition in an on-line course does not differ substantially from coursework in a traditional classroom environment.

Limitations

The following limitations are acknowledged for this study. These limitations may reduce or negate the generalizability of the findings beyond the present study:

- The study is being conducted at a single college that provides both upper division undergraduate and graduate coursework in business areas and is therefore viewed as a case study. The findings may not be generalizable to community colleges or colleges with broad curriculum offerings.

- The case study on-line participants included those students who were enrolled in an on-line course during the Winter 2005 semester. The students in the traditional group were enrolled in classes offered on campus during the same semester.

Definition of Terms

Andragogy	The art and science of adult learning, as coined by Knowles, author of *The Modern Practice of Adult Education:*

	Andragogy vs Pedagogy, published in 1968. Knowles and his followers contend that adults learn differently from children and should be taught accordingly.
Learning styles	Conceptual framework to describe the ways in which learners approach new information, process it, and apply it. Usually associated with adult learning.
Technologically-supported learning	Courses that rely for conveying information and enhancing student interaction on electronic means and methods, such as the Internet and its various facilities, such as access to the World Wide Web and e-mail; various forms of television, such as closed-circuit TV and interactive TV; and similar devices and methods.
Distance learning	The term used to describe education delivered by electronic or other methods to students who are not physically present on the institutional campus.
On-line environment	The term that describes the Internet and the World Wide Web as a complete social and educational context.
Synchronous communication	Communication in "real time" such as can be achieved on the Internet or with interactive television.
Asynchronous communication	Communication in which responses are delayed in time.

Chapter 2

REVIEW OF THE LITERATURE

Introduction

The literature reviewed for this study reflects academic research into the various aspects of on-line learning as a developing field. Initially, most attention was directed toward the changing role of the institution and its faculty as well as technical aspects of implementing distance and on-line learning. Learners' connectivity to the Internet has grown rapidly with higher education faculty improving their skills, knowledge, and their attitudes toward independent learning supported by technology.

An indication of the importance of this topic in higher education is the number of new journals that have appeared in recent years, such as the *Quarterly Review of Distance Learning, Interactive Learning Environments*, the *Journal of Computer Assisted Learning, Educational Media International*, and *CyberPsychology & Behavior.* More recently, the *American Journal of Distance Education* and *Internet & Higher Education* have appeared. In addition, two older journals have changed their names recently: the *Journal of Research on Computing in Education* has become the *Journal of Research on Technology in Education*, and the *Journal of Educational Television* is now the *Journal of Educational Media*. Articles on distance learning, on-line learning, and technologically-supported learning have increased in traditional journals in the last five years. For example, in 1998, the *Journal of Education for Business* published seven articles on these subjects, one in each of five issues and two in the year's final issue. In 2002, most issues contained three or four related articles, for a total of 17 for the year.

While institutions of higher learning are at various points on a continuum in regard to integration of the Web into their programs, McLoughlin (2000) provided a model describing the continuum. At the lowest level, the Web is used for student-to-student interaction on bulletin boards or in chat rooms, which may be moderated by the course instructor, who provides another level of communication and collaboration. At the highest end of the continuum, all course resources are available to students on-line and all activities, including submitting assignments and course evaluations, occur there. The underlying assumption for this level is that a *learning community* has been created on-line, in which students are autonomous learners and faculty are facilitators, coaches, mentors, and motivators. The integration of technology that is taking place on an institutional level is also occurring on individual program and course levels, and it is likely that the degree to which individual schools, departments, and instructors have integrated technology comprises a similar continuum.

Conceptual and Theoretical Frameworks

Constructivist Learning Theory and Learning Communities

As described briefly above, a *constructivist* approach to teaching and learning assumes that learners *construct* their own knowledge through an active process of using resources, working with others, and making choices and decisions. The theoretical basis for *learning communities* is constructivist theory, which has both cognitive and social dimensions. Cognitively, students construct knowledge through interaction with the environment, or resources available to them. Socially, students and teachers learn through interaction with others in conversation, dialogue, discussion, negotiation, and other communication modes, constructing knowledge by working together and actively participating. An additional benefit for instructors is that they can

"harness the power of conversations" among students, particularly when those conversations occur with electronic support (Prestera & Moller, 2001, p. 4). In the process, both students and instructors may develop a sense of community. The Internet that provides technological support to learning communities has been characterized by the formation of virtual communities since it first emerged, with bulletin boards, listservs (on-line subscription mailing lists), news groups, and chat rooms.

De Weerdt, Corthouts, Martens, and Bouwen (2002) provided a model of a *learning community* in which groups of learners who have assumed responsibility for their own learning by creating and actively participating in the learning process, together with their instructors, develop a group awareness of their common goals and directions, and a collective agreement about the meaning and purpose of their process and their goals. This emphasis on process is echoed in Lock's (2002) description of a learning community as a fluid process, rather than a static organization in the traditional sense, that exists primarily to meet its members' needs.

Given this foundation, creating a learning community out of a group of learners is not automatic or simple. Obstacles to developing the necessary kind of awareness exist among learners that they are in the process together. While the psychological and psychosocial factors that influence group dynamics are beyond the scope of the current research, these factors can contribute to students' reluctance to take responsibility for their own learning and membership in a learning community. It is less stressful to let the instructor shoulder these burdens (De Weerdt, et al., 2002). Prestera and Moller (2001) commented that in addition to providing positive

reinforcement, membership in a learning community could enhance the self-esteem and perceptions of self-efficacy in its individual members.

Engagement Theory

Kearsley and Shneiderman (1999) were among the foremost proponents of constructivist learning in electronic environments. From their experiences teaching in these environments, they developed *engagement theory* that proposes that "students must be meaningfully engaged in learning activities through interaction with others and worthwhile tasks" (p. 1). The connection between engagement, which is not a new pedagogical concept, and technology highlights the authors' belief that technology offers unique ways to enhance student engagement and supports the use of engagement theory as a conceptual basis for teaching and learning in technological environments.

The theory's components are abbreviated by Kearsley and Shneiderman (1999) as *Relate-Create-Donate*, referring to the principle of "creating successful collaborative teams that work on ambitious projects that are meaningful to someone outside the classroom" (p. 1). *Relate*, the first component, "emphasizes team efforts that involve communication, planning, management and social skills" (p. 1) similar to those demanded by the workplace. Collaboration is thought to improve motivation of distance learning students. The *Create* component requires students to define a problem, giving them a sense of control over their own learning. This component resembles Problem-Based Learning, long a fixture in medical and other professional education. The *Donate* component resembles service learning in that the project has a "customer," on campus or in the local community (e.g., a school or church, a nonprofit

organization or a local business). The authenticity of the learning context provided by the real-world nature of the project motivates students and creates satisfaction.

An important characteristic of engagement theory is its emphasis on human interaction with a course outline, text, or lecture, as well as with a group engaged in purposeful activity. The result was that student learning was measured not by their responses to test questions, but by evaluation by their customers (i.e., satisfaction) and their outputs (i.e., reports or presentations). From this perspective, Kearsley and Shneiderman (1999) contended that computers are genuinely used as tools for communication, rather than as another means of delivering course content.

Because many students (and teachers) may not be familiar with collaborative methods, the cornerstone of learning based on engagement theory, they often need help working together, at least initially. The instructor-as-facilitator can be invaluable in this respect by providing guidance in scheduling and time management, as well as project management and other skills common to modern business organizations.

Orienting learning to one or more projects may be new for many students and their instructors. As the choice of projects is often the most difficult phase, instructors need to be able to supply some choices, along with the criteria used to assess the project, to help students choose an appropriate topic (Kearsley & Shneiderman, 1999). The authenticity of projects is particularly important in curricula focused on business, since graduate students can use projects related to their current employment, and undergraduates can be initiated into solving real-world problems. In this component, the instructor, serving as the interface between students and their customers, is responsible for screening projects and their scope.

Theories of Adult Learning (Andragogy)

The term, andragogy, is generally credited in modern times to Malcolm S. Knowles (1968), whose book, *The Modern Practice of Adult Education: Andragogy vs. Pedagogy*, garnered considerable attention in and out of the academy (Rachal, 2002). Knowles continues to be a consistent reference in articles about adult learning, although when he was writing, the technological tools in everyday use in colleges, universities, and organizational training classrooms at that time were in the future. Knowles's original argument was that principles underlying how adults learn (what he called *andragogy*) were different from those underlying how children learn (*pedagogy*), suggesting that adult education based on pedagogy was a disservice to adults. Pedagogy did not help them learn because it was not based on the distinctly different ways in which adults learn.

Knowles (as cited in Bartz and Calabrese, 1991) offered five principles of adult learning:

1. Past experiences of adults greatly influence how they view and integrate new knowledge.

2. Adults have a strong need to be self-directed learners.

3. Readiness to learn in adults is driven by their need to use new knowledge to fulfill their roles and responsibilities (e.g., perform their jobs more effectively).

4. Adults approach learning from a problem-centered as opposed to a subject matter centered perspective.

5. Motivation in adults is as likely to come from internal factors such as self-esteem and pride, as from external factors such as pay or praise from super ordinates (Bartz & Calabrese, 1991).

Bartz and Calabrese (1991) viewed these principles as particularly relevant to business education, because undergraduate and graduate business students

seek learning experiences that are relevant to the world of work they expect to enter or in which they are involved. The business world requires employees to work with others, and wants them to use their experiences and knowledge gained from their course work in their work.

The concepts of andragogy have been criticized by educators and scholars since Knowles proposed it in the late 1960s. In the following decade, Knowles himself recast the andragogy versus pedagogy framework as more of a continuum that encompassed teacher-centered learning and student-centered learning at opposite ends. Merriam (2001) has observed that the current criticism of some scholars is now focused on what they perceive is missing from the andragogy framework – recognition of the learning context. The context in which students experience the learning process includes their personal histories and society that determines the shape and structure of education. In addition, the virtual classroom provides another dimension to the learning context for many students.

The conceptual framework known as *learning styles* (Kolb, 1984, as cited in Loo, 2002, and elsewhere) evolved out of work on experiential learning (i.e., learning by doing) as an attempt to model ways in which learners behave in learning situations. In Kolb's model, learning is described as occurring in four stages that comprise a continuous cycle: concrete experience, reflective observation, abstract conceptualization, and active experimentation. Two dimensions of learning, perceiving and processing, are related to each of the four stages in the cycle to distinguish four learning styles:

1. *Accommodator* are hands-on individuals who prefer to learn from actual experience and feelings rather than from observation and analysis.

2. *Divergers* look at situations from every perspective.

3. *Assimilators* prefer to consider all possible relevant material and then organize it logically.

4. *Convergers* are those who tend to seek concrete expressions for abstractions and theories (Loo, 2002).

An individual student may exhibit multiple styles in the learning process, despite a preference for one style over the others.

Loo (2002) applied principles of Kolb's learning styles model to business education by conducting an analysis of studies that relied on Kolb's Learning Styles Inventory, an instrument developed by Kolb to operationalize the model's concepts. While Loo's results were not definitive, he concluded that even those instructors who were aware of differences in students' learning styles were not necessarily making deliberate efforts to vary the context of learning to encourage students to use all four approaches. No studies were included in this meta-analysis that examined the application of learning styles to the on-line environment.

Situated Learning Theory

Situated learning is essentially learning by doing, often referred to as *experiential learning*, as learning occurs while an individual is *situated* in a particular environment or context. As Gery (2001) pointed out, this type of learning is usually flexibly structured and shaped around increments of learning rather than a single isolated project. The most familiar example of this type of learning is the internship. A variety of learning strategies are involved in situated learning environments, usually closely integrated with one another. Students commonly engage in variable manipulation (trial-and-error), or observation of a peer (manager-coach) or a process.

They may also engage in modeling, which involves reproducing others' behavior after observation. Students may receive coaching from others, or use inquiry to ask questions and research resources for answers to those questions.

Gery (2001) cited the work of Herrington and Oliver, who synthesized the research to describe a situated learning environment as one that:

- Provides authentic context that reflects the way the knowledge will be used in real life.

- Provides authentic activities.

- Provides access to expert performances and the modeling of processes.

- Provides multiple roles and perspectives.

- Supports collaborative construction of knowledge.

- Provides coaching and scaffolding at critical times.

- Promotes reflection to enable abstractions to be formed.

- Promotes articulation to enable tacit knowledge to be made explicit.

- Provides for integrated assessment of learning within the tasks (Gery, p. 423).

The Changing Role of the Instructor

General consensus has been noted in the professional literature that the on-line or virtual classroom is more effective for teaching and learning when it is student-centered, rather than instructor-centered. McLoughlin (2000), among others, observed that the instructor in an on-line classroom is no longer a deliverer of information, but instead is a facilitator who supports students' autonomous learning.

Knowlton (2000) contrasted two structures in support of his argument that a student-centered approach was more effective in an on-line classroom. The instructor-centered structure is dominated by the instructor, who decides what students will study

and how they should interpret what they study, thus controlling the course material and playing a role of expert in terms of deciding what is worth knowing. In the instructor-centered context, roles are rigidly defined: the instructor is the "giver of knowledge" and students are "empty vessels" to be filled with that knowledge. In a student-centered context, the responsibility for creating knowledge and understanding belongs to students (Knowlton, 2000). When students take control of their learning, what they learn becomes more personal and more relevant to them. Further, the instructor is not the only authority or source of knowledge in the student-centered classroom – students become responsible for finding those authorities. The role of the instructor then becomes that of guide, mentor, and coach, helping students educate themselves.

In terms of educational processes, knowledge transfer in a traditional approach in the instructor-centered context is accomplished using a one-way process, known as the lecture (Knowlton, 2000). The student-centered process uses more complex forms of communication, including collaboration and dialogue with the instructor, other students, and other authorities outside of the classroom and the institution. This *constructivist* approach generally advocates that students learn as they "construct" their own knowledge by working alone or with other students on real world projects, facilitated by the instructor.

Despite the rational nature of student-centered education, and its application to on-line classrooms, instructors continue to resist the approach. Some instructors have argued that traditional teaching methods (i.e., those with the instructor in control and at the center of the learning process) should remain constant because they work (Cornell as cited in Knowlton, 2000, p. 8). Others argued that on-line experiences and the use of other technologies can be integrated into the traditional classroom process without

changing it. Knowlton suspected that the latter argument was based on the assumption that students' time spent on-line can reduce the instructor's teaching commitment, and that integrating technology into the existing academic structure can be easier and less resource-intensive than designing and supporting a student-centered learning process.

Knowlton (2000) took the extreme view that the virtual classroom does not need an instructor, who can be replaced by text and other supporting materials. The contradictions involved in an instructor-centered on-line classroom also manifest themselves socially. In a traditional lecture format, students are together in a classroom and have a sense of themselves as a social group. In the on-line classroom, students have to depend on impersonal electronic communications to provide the social aspect of attending school. Knowlton argued that without the socialization found in traditional classrooms, on-line learning can become "dehumanizing" (p. 9). Another social aspect of the virtual classroom is that students who are not active participants in on-line discussion groups and other venues may not exist as far as the instructor and the other students are concerned.

Prestera and Moller (2001) observed that dramatic alterations in the role of the instructor have not changed the need for leadership among faculty members, regardless of whether their classrooms are actual or virtual. Knowlton (2000) asserted that the instructor's role in an on-line classroom is to "frame" the course, and provide resources and opportunities for students (Knowlton, 2000).

> Framing [essentially means] to establish clear goals, objectives, and
> learning outcomes. [It can also serve to motivate students] . . . to develop
> and implement shared goals [and] eliminate the innate tension between
> the pluralism inherent in a group of students and the need for shared
> goals that will allow students to reach learning objectives. (Knowlton,
> 2000, p. 11)

In addition, instructors can frame a course so that students understand how their work is evaluated. Prestera and Moller (2001) see the structure of a course as a major determinant of student interaction, and the instructor as the major builder of course structure.

Prestera and Moller (2001) described the on-line instructor in a variety of facilitative roles (e.g., guide, mentor, catalyst, coach, feedback-giver, and resource-provider).

- As a *guide*, the facilitator helps students become familiar with the on-line environment and learning tools they can use to collaborate with each other, provides technical information about using those tools, and deals with students' reluctance to communicate on-line and other issues related to social interaction and the learning process.

- As *mentor*, the instructor takes the lead in establishing the "culture" of the course by communicating values and behaviors that comprise the norms of the course.

- As *catalyst,* the instructor can prompt interaction between learners.

- As *coach*, the instructor can provide the kind of feedback students need in terms of how they experience the learning process, such as reminders, encouragement, and suggestions for resources and tasks.

- As *evaluator*, the instructor can provide students with opportunities to demonstrate what they are learning in a meaningful way and exercise problem solving, critical reasoning, and decision making skills. In asynchronous learning environments, the assessment process is as important to students as their academic outcomes. As Prestera and Moller (2001) comment, in a computer-mediated environment, assessments are equivalent to open-book tests. What matters is the quality of students' analysis of the problems, their reasoning, how well they collaborate with other students, and the way in which they support their conclusions. The process, in other words, is just as important – perhaps even more important – than the final answer (Prestera & Moller, 2001 pg. 8).

- As *resource-provider*, the instructor can use all resources on the Internet to mine information and course material. These resources can be helpful to students in the area of search strategies, encouraging them to find additional resources from their own experience and to engage in Web-based listservs or news groups, where they can discuss the subjects of their

learning with professionals outside of the course and the university (Knowlton, 2002, pg. 11).

The Distance Learning Environment

Models of Distance Learning

Moore (as cited in Huang, 2002) has developed a model of distance teaching and learning. He conceived the process occurred along three dimensions. The first dimension is teacher-student interactions in which the teacher gives instructions and the learner responds to them in an interactive cycle. Within this dimension, many interactions are possible: learner-to-teacher, learner-to-course content, and learner-to-learner. Learner-to-teacher interactions should prompt teachers to motivate and support learners with feedback. Learners interact with the course content to acquire and understand information. Interaction between learners enables them to exchange both ideas and information. As is evident, these types of interactions may occur both cyclically and continuously. The second dimension conceptualized by Moore was course structure, which may be rigid or flexible, and influences teacher-student interactions. The third dimension is learner autonomy.

In Moore's view, success in distance education relied almost entirely on the extent to which learners are autonomous. In addition, Moore emphasized that learners need to have sufficient skills in using the technology that supports distance learning, and "*the motivation to learn by technology* [italics added]" (p. 407). This requirement has received little attention from researchers, yet appeared to be a potential influence on both the effectiveness of and student satisfaction with distance learning.

Structure

Course structure is of critical importance in on-line learning. Issues of syllabus, study guides, delivery formats, and scheduling (sequencing) become of major

importance to faculty and students. Conceptually, structure relates to the degree of interaction and learner control in a learning environment. As noted earlier in this review, collaboration and maximum interaction – between students and faculty and between peers – is a major characteristic of the electronic classroom and often advanced as one of its great advantages (Kearsley & Lynch, 1996). Likewise, the theoretical foundations of distance learning lay great emphasis on learner autonomy. Generally, the less interaction in the instructor/student dyad, the less control the learner has, and, conversely, the more control the instructor has.

Instructors are generally in control of the syllabus, in terms of course goals and objectives, prerequisite requirements, assessment, course materials and content, and scheduling, so that, in effect, instructors control a major portion of students' experience with the course. Kearsley and Lynch (1996) thought that the distance learning environment was an uncertain one for students, with students wanting instructors to define course elements at the beginning of the experience. However, in a more interactive environment, students would be less concerned about getting these directives initially, as they would have more opportunities to question the instructor as the course proceeded. Since Kearsley and Lynch offered this observation, a greater number of students have had more experience with distance learning, which could dilute their conclusions somewhat. It may be more likely now that only some students, particularly those with little or no computer experience, may still be so uncertain of distance learning that they seek a highly structured, instructor-controlled experience.

Simonson (2000) was concerned primarily with choices that institutions and instructors make to use technology, regardless of its appropriateness to course content or specific students who have to use the technology. He invoked the concept

of *equivalency theory* to discuss the intent of some course designers to make the on-line experience "equivalent" in every way to the traditional classroom experience. Simonson believed that educators are doomed to failure, because they are limiting themselves and failing to recognize the unique possibilities offered by instructional technologies to provide students with learning experiences that are "different but equivalent" (p. 29).

Distance Learning Tools

Gery (2001) offered a number of ideas regarding the real-time technical support of the users of computer systems. Her observations were valuable to the current research, because she directly addressed designers of distance and other types of computer-supported education regarding the need for careful analysis of behavior and performance. Lock (2002) stressed that technical issues can be important to success for both students and instructors in on-line learning. She noted that instructors should pay careful attention to where on-line learners meet and communicate most frequently, where their most fruitful interactions take place, and where most learning appears to happen – it may not be the instructor designated bulletin board, listserv, or chat room.

Not all instructional methods lend themselves easily to technological support. However, many do. The list of methods studied by Kaupins (2002) and their ratings are presented in Table 1. Based on this study, it appears that the preferred methods of learning by students are a more "hands-on" and participative. Methods involving various electronic support mechanisms are less effective means of learning.

Table 1

Instructional Methods

Instructional Method	Preferences
Internships	1
One-on-one instruction	2
Case study (live)	3
Role plays	4
Case study (simulated)	5
Games	6
Lecture with questions	7
Web with chats	8
CD-ROM	9
Self-study materials	10
Sensitivity training	11
Television (interactive)	12
Web with interactive videos	13
Programmed instruction	14
Web with videos	15
Televison (broadcast)	16
Web with typed lectures	17
Videos	18
Web with audio	19
Radio	20

Kaupins invoked andragogy theory as a rationale for the low ranking of the electronically-supported methods, suggesting that students might not find them as engaging in terms of active participation, or as "real" as case studies or internship experiences. In terms of objectives, survey participants rated Web course, programmed instruction, television, CD-ROMs, videos, and self-study materials relatively high for their use in acquiring and retaining information, and low for their support of developing interpersonal skills.

Bober and Dennen (2001) explored one aspect of the concepts of constructivist learning in on-line environments – the process by which knowledge is constructed through electronic communication. Their work is of value to current research because

it underscores the instructor's role in interacting with students, and because it focused on the concept of shared understanding, or *intersubjectivity*, a fundamental element in establishing learning communities.

In their detailed analysis of the various electronic tools used to support student interactions in the virtual classroom, Bober and Dennen (2001) emphasized the need for instructors and/or course and program designers to choose these tools carefully and deliberately to meet learning objectives. They cited, for example, the use of chat rooms (the most common type of synchronous communication) to build a sense of community. In their view, the opposite effect could occur, including elements such as: time zone differences, domination of conversation by skillful keyboarders, and lack of adherence to (or ignorance of) etiquette protocols, that when combined create an overall sense of disjointedness among learners.

Bober and Dennen (2001) also provided a thoughtful analysis of the comparative characteristics of synchronous and asynchronous communications. As noted earlier, the most common form of synchronous communication on-line is the live chat, thought to closely resemble live, in-person classroom discussion. The principal obstacle to genuine, spontaneous conversation on-line, however, could be something as mundane as deciding how people could take turns "talking," especially when chats involved large numbers of participants. In that case, ideas and concepts offered by students may be difficult to follow, with some participants dominating the conversation. Other students may be overlooked during the chat. In addition, others may have difficulty in becoming engaged with participants who "lurk" (fail to participate except by reading others' inputs). Asynchronous communication (e.g., e-mail, bulletin boards, listservs, or news groups), however, could enable participants to follow more than one

discussion thread and contribute to discussions without being interrupted or waiting their turn. The obstacle here, in Bober and Dennen's view, was that community-building was more difficult, because participants were in control of the order in which they read posted messages, the time required to respond, and the potential need for numerous messages to clarify participants' thoughts and statements.

Prestera and Moller (2001) suggested that students need to have opportunities to participate in both synchronous (chat rooms, face-to-face meetings, audio or video conferencing) and asynchronous (email, listservs, dedicated electronic bulletin boards) work. They also recommend the use of virtual presentation spaces, known as computer-supported intentional learning environments (CSILEs), common Web-based databases where students can access text and visual information. The authors also recommended that instructor-supported discussion for distance learners should be given high priority in structuring courses, so that learners have time to reflect on the learned information and to discuss it with others. Particularly with asynchronous modes of communication, learners have more time to think about instructional materials and respond to it in a meaningful way, than they have in a traditional live classroom setting.

DeBard and Guidera (1999/2000) presented a strong argument for the use of asynchronous communication in electronic classrooms. First, they asserted, the asynchronous classroom can be independent of both time and place, and thus constitute a unique context for discussion. The second advantage is that this type of classroom is supported by technology already in common use by students and faculty in most higher education institutions. Their primary argument, however, was that asynchronous communication could enhance the effectiveness of student learning

because it fits the seven principles of effective teaching developed by Chickering and

Reisser (as cited in DeBard & Guidera, p. 221). These principles stated that effective

teaching:

1. Encourages student-faculty contact;

2. Encourages cooperation among students;

3. Encourages active learning;

4. Gives prompt feedback;

5. Emphasizes time on task;

6. Communicates high expectations; and

7. Respects diverse talents and ways of knowing.

While an evaluation of on-line learning in the context of effective teaching is beyond

the scope of this review, and is not the focus of the current research, studies

supporting student appreciation of the support for these principles in on-line learning is

instructive.

Asynchronous learning environments are not without problems, especially for

commuting students and those who work full-time off-campus, access may be a

problem in terms of time lapses that inhibit discussion. Some students may not ask

questions if they do not understand course content or processes because they are

unsure of receiving a prompt response. The perception of anonymity that pervades the

Internet can be an advantage for certain students with cultural or physical limitations or

an overall disadvantage if it encourages students to make negative comments or

otherwise behave without the constraints of face-to-face communication. Finally,

without nonverbal cues of body language, gesture, tone of voice, and facial expression

available to them in face-to-face communication, students may misinterpret others'
statements.

Empirical Research

The empirical literature ranged from very general approaches to the overall
subject of on-line or distance learning to focused examinations of single variables. The
spectrum of empirical studies ranges from considerations of design and structure in
on-line courses to studies focusing on students' behavior, satisfaction, and outcomes
in the on-line environment.

At the more general end of the spectrum is the work of Nichols and Gardner
(2002), done from an institutional perspective. Their focus was on the issue of
flexibility as an educational strategy at a large New Zealand university, with particular
reference to the use of innovative methods in course delivery, of which several relied
on the Web as a program platform. One finding in the Nichols and Gardner (2002)
study was recognition on the part of the administration and faculty that movement
toward flexible course delivery is a move toward student-centered, rather than
instructor-centered learning. Interestingly, both faculty and students reported a
perception that they were required to work much harder in an on-line environment,
primarily because of opportunities and responsibilities for increased participation and
interaction.

In their qualitative case study of a single graduate course, Hara and Kling
(2000) emphasized that the primary factor in satisfaction of faculty and students with
electronically-supported teaching and learning was the design or structure of the
learning experience. In particular, they found that frustrations involved in dealing with
issues of a purely technical nature (e.g., software glitches and communications

breakdowns, etc.) were paramount features of the learning experiences for everyone involved and tended to color their perceptions of the entire experience.

Another finding of the Hara and Kling (2000) case study was that the flexibility offered by on-line learning could become a source of frustration for students. Those students who tended to do their on-line work at odd times of the day or week found that when they encountered technical problems or had questions for the instructor about the learning process or course content, they were unable to resolve their problems or questions because the appropriate individual from whom they might expect help was unavailable. This issue of the isolation of the autonomous learner was a common thread throughout the analysis of this particular case study. Flexibility offered by on-line learning was a major advantage for some students, because they could do their work at a time and place that was convenient for them. For others, the relatively "cold" quality of e-mail and other electronic communications led to confusion and anxiety about interactive communications. Some students reported that they were unsure about the quality and quantity of their on-line communications. Because of the asynchronous nature of the communication, feedback from other students and the instructor was sometimes confusing. The confusion also extended to instructors who often had to exchange several messages with students before understanding students' questions and concerns sufficiently to give a helpful response.

Studies of Students' Perceptions

Studies conducted from the perspective of students also covered a wide range of topics, from surveys of students' attitudes toward on-line learning in general to tightly focused studies of single variables. Among the general studies, Sullivan (2001) surveyed student attitudes by adding two questions to an existing survey, the

Connecticut Distance Learning Consortium (CTDLC) standard course evaluation form.

Sullivan asked:

1. Is there anything about the on-line classroom that has made it easier for you to learn, achieve your academic goals, or participate in class discussions (as compared to a traditional classroom?

2. Is there anything that has made it harder? (p. 806).

The purpose of these questions was to identify differences in experiences of men and women in the distance learning environment.

Sullivan (2001) found that flexibility was a primary issue for all respondents and a positive factor for almost all participants. The most common negative factor was the lack of face-to-face interaction between instructors and peers, which was expected. However, as Sullivan pointed out, this particular criticism may have been related to teaching specific individuals or to course design. Complaints about insufficient feedback or discussion groups that were not moderated or moderated ineffectively could be attributed to either an individual instructor's behavior or the design of the course. To provide a context for survey results, Sullivan cited prior research showing that personal interaction among students and between students and instructors is especially important to students who are taking on-line courses (Merisotis & Phipps and Russell as cited in Sullivan (2000); Palloff & Pratt, 1999; White & Weight, 1999).

Analysis of the gender factor in on-line learning occurred in Sullivan's (2000) report almost accidentally, as he was not looking for gender differences in the findings. In terms of the potential for the on-line classroom to be more 'female-friendly', Sullivan found that his data supported the idea that on-line classrooms can be more welcoming than traditional classrooms to women. The masculine discourse style tended to dominate traditional classrooms, giving preference to masculine discursive

characteristics as "highly assertive speech, impersonal and abstract styles, and competitive, 'devil's advocate' exchanges" (p. 812). Gender differences also were apparent with regard to self-discipline and pacing in Sullivan's (2000) report. Female students found the self-discipline required in the on-line environment to be a negative aspect, suggesting that female students were less comfortable working independently.

In a study comparing student perceptions of on-line instruction with traditional campus-based instruction, Beard and Harter (2002) solicited evaluations from graduate students specializing in Special Education who were enrolled in one Internet course of the program at Jacksonville State University in Florida. The entire sample reported that they would take another Internet course, despite the frustration some students experienced in using the hardware and software necessary to access the course materials and facilities. The primary advantage for these students was the flexibility offered by on-line instruction in terms of their work and life schedules. The primary disadvantage was the lack of interaction with the instructor.

In a study similar in its general approach to issues involving on-line learning, Phillips and Peters (1999) compared on-campus students and those located in rural areas to determine whether distance learning could be used effectively by both groups and if the course could be designed to appeal to both groups. Results showed no statistically significant differences across both groups on satisfaction, attitude, or accessibility issues. These results were interpreted by researchers as encouragement for administrators and course planners in higher education to continue to seek opportunities to expand enrollments and reach by offering distance learning opportunities.

Kendall (2001) provided a comprehensive examination of a program that combined face-to-face teaching with on-line materials that was designed and implemented in the United Kingdom. Results were generally positive, but on closer examination it became evident that students were evaluating software and course materials in terms of ease of use and of technological supports themselves, rather than instructional qualities of the program. This program was a learning experience for the students as well as the university, as many of students and faculty were unfamiliar with the Internet and lacked sophisticated computer skills.

Anderson, Banks, and Leary (2002) also studied student satisfaction, in a project that focused on the use of interactive television compared to traditional classroom delivery. In this case, students who viewed course lectures and participated in discussions from remote sites were considerably less satisfied than students who experienced instruction in a traditional classroom setting. Even though different instructors were used, researchers were able to discount personal differences in teaching style as a factor, concluding that the method of delivering the course was the determining factor in satisfaction levels.

An interesting finding in the Anderson et al. (2002) study was that students were unable to distinguish between their perceptions of the quality of the instruction and their perceptions of the course delivery method. The researchers attributed this finding to a halo effect by which participants attributed their perceptions of one aspect of a situation to their perceptions of other unrelated aspects of the same situation, suggesting that the course delivery method could have been responsible for students' negative perceptions. For example, students indicated that they were not given enough opportunities to ask questions at the remote sites. Anderson et al. implied that

they were unable to explore this concern within the limitations of their study. The direction for future studies indicates that all variables that comprise the complexity of research in this area need deliberate clarification.

While student satisfaction has been a popular subject for study among researchers, student outcomes are also being given increasing attention in the literature. In most cases, outcomes tended to be operationalized as students' grades on course tests, reports, and projects, as they were in the Kendall (2001) study, where a correlation was found between greater participation in on-line interactions and higher grades. O'Hanlon (2001) included grades as a measure of the success of a distance learning course that was designed to both instruct in and encourage the use of Web-based instruction among entering college students. To obtain profiling data, students were asked to provide information about how long they had been using computers and about their daily computer use. The researchers conjectured that prior computer experience and skill levels would be correlated with students' final grades. The findings of this study did not support this hypothesis.

The research conducted by Bearden, Robinson, and Deis (2002) could be typical of what a certain segment of the research community was expecting to find by studying the relationship between on-line learning and student achievement. Bearden et al. found no statistically significant differences in the performance of dental hygiene students on institutional or national examinations between those who took courses in traditional classes and those who took them on-line. Studies like this tend to support institutional administrators who advocate expanding the student body by offering distance learning and refuting claims by entrenched faculty members that students could not learn outside of the traditional classroom setting. On a deeper level,

however, the ambiguous meaning of study results like these may point to a need for institutions and instructors to design courses supported by technology according to traditional principles, such as matching instructional methods to course content.

O'Hanlon's (2001) study measured the success of an on-line course using an assessment of students' "attitudes" that were inferred from course evaluations completed by students after the course ended. In effect, students evaluated how well the institution had organized the course and course materials by answering questions about the quality and quantity of information provided to them. This study was another case in which the institution had used a research study to evaluate its decisions, strategies, and investments in technologically-supported teaching and learning. As observed earlier, too few studies are available that contribute to what scholars know about the process of on-line learning.

Research by Woods (2002) and Woods and Keeler (2001) experimented with audio e-mail messages, measuring their effect on outcomes for students' participation in, and perceptions of, an on-line course. They chose the audio-as-attachment technology as a supplementary means of communication in addition to text messages relayed in on-line discussion groups. They wondered if these attachments could increase students' participation, both their frequency and the length of their individual communications. In addition, they wondered if these attachments could produce positive student perceptions of their relationships with instructors, quality of communications in on-line discussion groups, their sense of community, and their overall satisfaction with the course.

Woods and Keeler (2001) used three experimental groups and a control group, to which students were randomly assigned. Personal e-mails with audio attachments

were sent to one group weekly (totaling 15 messages), to another group monthly (totaling four messages), and to one group every two months (totaling two messages). The control group received no personal messages from the instructor. They found no statistically significant differences between the experimental groups. The experimental group that received the fewest messages contributed more posts to the discussion group and with the most frequency, and the experimental group that received the most messages made the fewest contributions. The same was true with regard to length of posts to the discussion groups. No statistically significant differences were found in student perceptions of their relationships with the instructor, their sense of community, or their overall satisfaction. The only result with statistical significance was that students in the experimental group receiving fewest messages had the highest level of satisfaction with the quality of group discussions.

Woods and Keeler (2001) concluded that additional extraneous variables were contributing to the results. They suggested, for example, that group dynamics could have made a difference in students' perceptions. In addition, they proposed that aspects of instructors' participation in group discussions may have had an effect, such as the degree of involvement or level of leadership.

Woods (2002) conducted a similar study of students' participation in, and perceptions of, an on-line course relative to the frequency of personal communications they received from the instructor. Woods used the same random assignment to experimental and control groups, and measured the same outcomes. The only change in the study protocol was that Woods used text e-mails with no audio attachments. Again, no statistically significant differences were found among groups in their reports of a positive relationship with the instructor, a sense of community, or overall

satisfaction with the course, confirming Woods and Keeler's (2001) earlier results. Again a difference was found in student participation in on-line discussion groups, with those receiving the fewest e-mails participating in on-line discussions nearly twice as often as those who received the greatest number of e-mails. The highest level of participation in group discussions, however, came from the control group, whose members received no e-mails from the instructor.

Despite these nonsignificant findings, Woods (2002) did not discount the notion that a high degree of student-instructor interaction contributed to students' perceptions of a positive student-faculty relationship, increased participation in on-line learning, and overall satisfaction. He suggested that this study failed to consider the frequency of student-instructor interaction within group discussions, or the quality of those interactions, suggesting to Woods that future studies should control for these variables. Woods concluded that the quality and frequency of student-instructor communication within the structure of a course is highly significant. This study; particularly its conclusions, limitations, and suggestions for future research; is typical of what is currently being done in this field and presents a useful snapshot of the current state of research.

Some research has focused specifically on the interactive aspect of on-line learning, which is regarded as a primary determinant of effectiveness and student satisfaction with this educational delivery method. Some researchers have approached this aspect quantitatively, such as Althaus (as cited in Prestera & Moller, 2001) who counted the number of words in students' contributions to electronically-supported discussions, and compared them to the number of words in their contributions in

traditional live classrooms. Althaus found that students had more to say in electronic settings.

Other studies, including the work of Sannomiya and Kawaguchi (1999), focus on the influence of electronic learning support on students' on-line behavior. For example, they compared asynchronous computer-mediated and face-to-face communication. The researchers (as cited in Prestera & Moller, 2001) found that students' on-line contributions were unlikely to include personal information and experiences, fragments and unfinished sentences, and repetitive or extraneous material. The key to asynchronous computer-mediated communication is the lack of time constraints. While in some situations and for some tasks, synchronous communication is better; given the time, learners can read messages at their leisure; reflect on them and deliberately create a reasoned response; explore other resources; structure a response, edit, and even revise it; communicate in written form with the addition of images and supporting Web links; and obtain similar material from peers and instructors.

A study conducted by Jung, Choi, Lim, and Leem (2002) confirmed that students experienced greater satisfaction with on-line learning when the structure of a course included collaborative interaction with peers or social interaction with their instructors. Jung et al. also included outcomes, including student grades on course assignments. As a result of the statistically significant differences in satisfaction with Web-based learning in general between the control group and the collaborative interaction group, Jung, et al. (2002) concluded that interaction with other students was a stronger correlate of overall satisfaction than interaction with the instructor. In terms of achievement outcomes, results found that students in the social interaction

group (student-instructor) performed better than the collaborative interaction group. Analysis of participation showed that the instructor's influence was a major factor in achievement outcomes. This finding suggested that instructors need to make their expectations clear in regard to student participation and encourage students to become active participants. Students in all three groups had more positive attitudes toward on-line learning after the course was completed, regardless of their academic outcomes or the types of interaction they experienced.

Studies of On-line Business Education

A small, but growing, body of research specifically focused on distance and on-line learning in the field of business education. DeSanctis and Sheppard (1999) described an MBA program offered by Duke University that incorporated several residential modules in Europe, Asia, and the Americas during the 19-month program for working business executives located world-wide. The technology used to support this combination of self-study, collaborative team work, and face-to-face instruction and interaction was highly varied. Students engaged in individual reading and research; case discussions (electronically- or paper-based, with interaction in chat rooms or on electronic bulletin boards); question and answer sessions on electronic bulletin boards; CD-based tutorials; simulations involving role plays, decision analysis and reporting; "office hour" discussions with faculty in chat rooms; student team meetings in chat rooms; assignments and projects; and examinations. The learning infrastructure included both high-tech and low-tech elements. The authors believed that the variety of supporting technologies was a major factor in the success of this program, which continues to be offered by the university.

Kaupins (2002) surveyed business school professors regarding their preferences for various methods of training to achieve specific learning objectives. The objectives included "knowledge acquisition, problem solving, participant acceptance, changing attitudes, interpersonal skills, and knowledge retention" (p. 320). Participants in the survey rated each of 20 instructional methods according to their effectiveness in meeting the learning objectives (See Table 1). He concluded that instructor-led training was rated higher than technology-led training in terms of amount learned during the course and popularity with the instructional delivery method. Web course options that include a greater number of interactions (e.g., chats) between students and the trainer received higher ratings than typed lectures that minimized sensory contact of students. While participants rated Web courses, programmed instruction, television, CD-ROMs, videos, and self-study materials relatively high for knowledge acquisition and knowledge retention, they rated them low in regard to interpersonal skill development.

A tightly focused study was conducted by Basile and D'Aquila (2002) in using a single financial accounting course. The researchers compared the perceptions of two groups of students, one that was taught by traditional classroom methods and one that took the course on-line. Their intent was to study students' attitudes toward a single course delivered in two different ways: a traditional lecture-discussion format and a computer-mediated format. They found no differences in attitudes about the course, despite its method of delivery. However, the teaching style of one instructor appeared to be better suited to the lecture-discussion format, suggesting to Basile and D'Aquila that instructors' attitudes toward the course delivery method need to be examined. They also found that students with more computer experiences generally had more

positive attitudes about the computer-mediated delivery of the course than students who lacked computer experience.

Gray and Salmon (1999) reported on experiences of the Open University Business School of the United Kingdom (UK) in the use of computer-supported conferencing and students' perceptions of this means of delivering course material and offering opportunities for interaction. The conferencing method was introduced to enhance development of a learning community by offering more opportunities for faculty, students, and business experts to interact without being in the same location.

One advantage that Gray and Salmon (1999) had was that the conferencing program experience over a period of two years was fully documented. This documentation included student responses to extensive questionnaires about the value of the program to their learning. The researchers were able to attribute increases in student satisfaction levels to changes made in the program based on students' suggestions and feedback at the end of the first year. One consistent feature of student responses to the program was evidence of their reluctance to participate in contributing to conferences attended by people unfamiliar to them. A substantial number of students reported that they read others' contributions, but made few or none of their own (they were termed *browsers* by the research team). More students felt comfortable making their contributions by asynchronous e-mail than by live appearances on camera.

Among the business studies, a growing number focused on single classes, perhaps because samples were more convenient and variables more controllable. For example, Watters (2000) compared live, Socratic question-and-answer teaching with computer-mediated instruction in the form of a project in the context of a single

undergraduate accounting class. The data collected consisted of student evaluations of these instructional methods conducted both before and after the students experienced these methods. This study was one of the few that targeted the role of computer-based instruction that considered students' expectations and related them to their previous academic experiences. The results showed that prior computer experience was related to student preferences for the computer-based instructional method. However, students preferred neither method, commenting that teachers should lecture.

A study conducted by Cheung and Kan (2002) was set in Hong Kong, partially to determine if cultural differences existed in student perceptions of distance and on-line learning. The course that formed the context for their study was business communications offered at the Open University of Hong Kong. This institution admits students aged 17 or older with no other entrance requirements, resulting in a student body with a wide range of experiences and abilities. The researchers, keeping their cultural goal in mind, chose to study variables (e.g., age, gender, marital status, attendance, course loads, academic records and background, and prior experience with computers). Attendance was included because the course structure included a number of optional in-person meetings with a tutor. The researchers used academic performance as the outcome, against which the variables were correlated.

Among the demographic variables, Cheung and Kan (2002) found that gender was the only variable that correlated with performance with females performing better than males. The researchers could only guess at the reasons for this finding and were unable to study the result in any detail. Overall, their findings resembled those of other researchers; previous academic experience and background were associated with

better performance in distance learning. The authors concluded that distance learning is a viable strategy for institutions looking to expand their reach through distance learning offerings.

Sonner (1999) also used academic performance to assess the effectiveness of distance learning. Her focus was the capstone course in the business program at a small southeastern university. The sample in her study consisted of students who had completed requirements for the business program, exclusive of the capstone course, through a variety of means: televised lectures and live review sessions; traditional classroom learning; and independent learning under faculty supervision. Although more than 65% of the students in the sample had completed at least one of the required courses through distance learning, the mixture of instructional delivery methods by which students had fulfilled program requirements was diverse.

Sonner (1999) analyzed the data using a variety of statistical analyses. She compared academic achievement of students who had completed at least one distance learning course with students who had only live classroom experience. Those students with distance learning credits performed significantly better in the capstone course than students with only live classroom experience. Further, students who had completed a greater number of distance learning courses had higher grades in the capstone course. One limitation of the study for purposes of the present research is that the computer-based distance learning option was essentially a passive method of instruction without much opportunity for students to interact with each other or the instructor.

Methodological Issues

An examination of variables used in the studies on student perceptions of differences in instructional delivery methods that have been conducted to date show that researchers continue to speculate about what factors can influence student satisfaction. Some studies have relied on traditional variables used in research among college students and adult learners, such as age and gender. A variable that has not been investigated in depth is prior computer experience; with attitudes toward computers and new technologies an important consideration. Some researchers have looked at learning styles, attitudes toward the concept of on-line learning, and motivation to determine student perceptions of on-line instructional delivery methods.

Design

Jung et al. (2002) used a pretest/posttest design with two experimental groups and a control group. The pretest assessed students' previous experience with Web-based instruction, their attitudes toward on-line learning, and their motivation. All students in the study completed the same course, with the same content, and had access to a discussion board. The three groups were distinguished by the type of asynchronous interaction they were allowed to engage in, characterized as *academic* (between learners and the Web-based course material and between students and instructor on tasks only), *collaborative* (group work on a specific project or problem conducted on-line), or *social* (instructor-to-learner communications designed to motivate, encourage, and support students' integration with the on-line community). The *academic* group was the control group, and was given no interaction with the instructor except on questions of course content. The two experimental groups engaged in all three types of communication. In addition to the posttest of attitudes

and satisfaction, outcomes in the form of students' grades on five course assignments were used in the study. Finally, participation was operationalized as the number of messages individual students posted on the shared discussion board.

Jung et al. (2002) found statistically significant differences among the three groups on learning experiences and satisfaction with their learning experiences. The collaborative interaction group had the highest scores for learning achievement and satisfaction, with the social interaction group having significantly higher scores for participation. The academic interaction group had the lowest scores on each variable. An important finding of the study was that regardless of group membership a positive change in attitude toward on-line learning occurred among all three groups after their Web-based learning experiences.

Huang's (2002) review of literature identified variables that have been considered in the empirical research. They included: gender, age, prior experience with computers, and technological skills. Huang examined student perceptions of a graduate education program that is delivered on-line at Seattle Pacific University. The survey was designed in two parts, the first of which elicited demographic information, such as gender and age, along with student experiences with on-line courses, the Internet, and e-mail, computer skills in using word processing programs and search engines; and a brief item regarding "the usefulness of on-line courses for conducting distance education" (p. 409). In the second part, students answered 27 questions designed to elicit their perceptions of the on-line courses they were taking.

Interaction has been operationalized as "two way communication between a learner and the instructor and among learners than can take the form of synchronous and/or asynchronous conversation" (Chen & Willits as cited in Huang, p. 410).

Structure was operationalized to mean "the extent of rigidity or flexibility in the course organization and delivery" (Huang, 2002, p. 410). *Learner autonomy* was operationalized as "the learner perceptions of both independent and interdependent participation in a learning activity and involves both the learner's ability to learn individually/self-directed and his or her preference or need for collaborative learning" (Chen & Willits as cited in Huang, 2002, p. 410). *Interface* was operationalized as "on-line computer-mediated communication" (Huang, 2002, p. 410) with the software used by the University.

Huang (2002) found that age was significantly correlated in a positive direction with interaction, course structure, and interface. Statistically significant correlations were found for course structure, learner autonomy, and interaction with the computer skills in Microsoft Office™. Computer skills in terms of using a web browser were significantly correlated with learner autonomy and interface. Learner autonomy accounted for 29% of the variance in student perceptions of on-line courses as a good way to conduct distance learning. According to Huang, the students must be able to interact proficiently with the interface (delivery system) before they can successfully learn from the interaction, course structure, and learner autonomy. Interactions between the student and instructor and with other students is helpful in mastering course content. Huang acknowledged the small sample size (N=31) and the limited number of courses offered on-line at the university as limitations of the study and recommended replicating the study with a larger sample and in a university with greater number of on-line courses.

Phillips and Peters (1999) compared two groups of students taking the same course who differed only in their locations – the on campus group included students

who lived on campus or commuted from short distances and the off-campus group of students who lived at a distance from the campus. Both groups completed the same marketing course delivered by interactive video technology produced on the main campus and transmitted to three regional locations. This design was unusual in that it compared students by location, rather than by course delivery method. Students off-campus had higher levels of satisfaction than students on-campus. The authors conjectured that the instructors planned their courses to accommodate the off-campus students and help them feel included. On-campus students may have perceived that the professor was less accessible because of the technical adjustments made for the students in rural locations. According to Phillips and Peters, students on-campus may be less satisfied and fewer students would enroll in the course while students off-campus may be more satisfied with student enrollment at these sites increasing. While the authors presented conclusions regarding targeting different groups for on-line courses and trying to determine the maximum number of sites that would not dilute the satisfaction level of the students, they also cautioned that technology should be considered as part of the delivery system and cannot stand alone in the delivery of instruction.

Summary

The review of literature focused on the integration of technology into higher education indicating that this area of research is still developing, although perhaps not at the pace with which institutions are adopting technology-based educational programs and practices. The literature is highly diverse, ranging from anecdotal and editorial commentaries by administrators about struggles their institutions are having with technology-related decisions, designing courses, training instructors, and finding

new roles for themselves and their faculties to highly-focused empirical studies of specific variables related to the effectiveness in on-line learning.

Theoretical and conceptual foundations of teaching and learning that underlie technology integration have been established through prior research. Studies published in the last 30 years on the learning process have found a trend toward student-centered learning models at all educational levels. At the heart of this trend is the growing adoption of constructivist frameworks to support a learning process in which students play central roles. Related theories of engagement, situated or experiential learning, and andragogy have become important research bases.

The changing role of teachers is of concern in an increasingly student-centered environment. The literature reflects a continuing confusion over whether technology is a "delivery vehicle" or a tool by which students can educate themselves with the help of their teachers as guides, mentors, and coaches. The distance learning environment, the virtual classroom, is the subject of considerable research as scholars consider new learning structures and tools that students can use to adapt to them.

The empirical work covers a vast range in terms of its scope, goals, and intentions. In one area of the research, scholars continue to ask basic questions about technology in education: Should we use it? Why? Do students like it? Why? In another area, scholars proceed on the assumption that technology is accepted as a viable educational tool and are examining barriers and facilitators to students use of this tool. In particular, concern has been raised over the barriers to full interactive participation in the virtual classroom. Students, like their teachers, have had mixed reactions to the integration of technology into their educational experiences. For many students, the flexibility and convenience of distance learning represents opportunities they would not

have otherwise, and many also recognize that technology has improved their academic outcomes. For other students, technical challenges involved with internet courses have proved daunting, with others finding the impersonality of the learning environment unwelcoming. Research has yet to identify which students function effectively in virtual environments and why.

Research methodology in this area continues to evolve. Researchers need to develop better models of the learning experience in the virtual classroom, along with a comprehensive view of steps in the process. More precise definitions of the variables that influence the effectiveness of technology-supported learning are needed. In addition, the direction in terms of study designs needs to be clarified to provide administrators and instructors in postsecondary institutions with research-based findings that can be used to plan virtual classrooms.

Chapter 3

Methodology

Introduction

The methods that were used to collect the data needed to describe the sample and address the research questions are presented in this chapter. The topics that are included in this discussion are: restatement of the problem, research design, setting for the study, population/sample, instrumentation, data collection procedures, and data analysis. Each of these sections is presented separately.

Restatement of the Problem

The purpose of this study was to examine students' perceptions of on-line courses in bachelor and masters of business administration programs at a private business college and to determine if relationships exist in their perceptions of their preparedness for the on-line course, the viability of on-line courses compared with traditional classroom-based courses, and their overall satisfaction levels with the on-line experience. In addition, the study focused on determining if there were any significant differences in these perceptions based on demographic variables, such as gender, age, socioeconomic level, and employment status.

Research Design

This study used a nonexperimental, descriptive research design to explore student perceptions of their satisfaction with on-line courses, and students' perceptions regarding the extent to which they had been prepared to complete these courses. This type of research design is appropriate as the independent variables were not manipulated and no intervention or treatment is being provided to the participants.

Although the same types of threats to the internal and external validity of experimental designs may not apply to this study, the researcher must be aware of any uncontrolled extraneous variables that may be affecting the outcomes. By understanding these uncontrolled extraneous variables, the researcher can include their possible influence on conclusions.

Setting for the Study

A private business college that offers upper division undergraduate and masters-level educational programs in business provided the setting for this study. Founded in 1922, the college has become a respected upper-division business school with a positive reputation for providing quality, real-world business education to junior and senior students, as well as master-level students. More than 3,200 students are enrolled at three campus locations. Overall enrollment is approximately 47% male and 53% female. The undergraduate offerings include: Bachelor of Business Administration degrees with majors in Finance, Marketing, General Business, and Business Information Technology, Bachelor of Accountancy degree, and Bachelor of Science in Business Information Technology. The college offers Master of Science degrees in Business Information Technology, Finance, Tax, Managing Manufacturing Operations, Management, Marketing, Accountancy; Master of Arts in Economics, and Master of Business Administration (MBA). Graduate enrollment is approximately 70% of the total enrollment. Approximately 30% of students (upper division undergraduate and graduate) are enrolled in on-line courses. The college schedules four 11 week semesters (44 contact hours) per year.

The mission of the college is to provide a quality, practical business education that enables students to become successful business professionals and leaders. The vision of the college is to be recognized as a preeminent leader in business education. Ongoing assessment and continuous quality improvements have resulted in broadening the college's reputation and creating opportunities for growth that contribute to the college's resources. The college community shares the following values as it works together to accomplish its mission:

- Student Success
- Quality
- Practical application of knowledge and professionalism
- Accessibility and flexibility
- Innovation, creativity, and teamwork
- Diversity
- Leadership and fiscal responsibility

The college has had an infrastructure in place to support on-line learning for several years, and offers both classroom-based and on-line learning modes of instruction to students at both undergraduate and graduate levels. On average, 22% of all courses are offered on-line each semester.

Participants

Participants for this study included undergraduate and graduate students enrolled in on-line and traditional courses for the 2005 Winter Semester. These students were enrolled in a variety of disciplines (e.g., accounting, marketing, business information technology, etc.).

The 942 on-line students enrolled in Winter 2005 participated in the study through the use of a survey distributed on-line. A sample of 160 students enrolled in traditional classes during the Winter 2005 semester was asked to participate in the study. These students completed the survey using a paper-pencil format.

Data Collection Instruments

Data were collected via a two-part original questionnaire that was administered on-line and to a sampling of traditional classroom students. The first part obtained demographic information (e.g., gender, age, employment status, etc.) from the students. In addition, the student's program, college variables, and types of available technology were included on the survey. The items included on this part of the survey used a combination of forced choice and fill-in-the-blank formats.

The second part of the questionnaire included a series of original statements regarding perceptions of on-line learning and relationships with faculty and student cohorts. The statements were developed specifically for this study based on a comprehensive review of literature and teaching experiences of the researcher. All statements were phrased in positive terms. Some statements were designed to elicit participants' perceptions of their preparedness to take on-line courses and the viability of on-line courses as compared with traditional classroom-based courses. The *preparedness* statements sought information about participants' computer experience, comfort level in an on-line environment, and degree of on-line expertise. The *viability* statements sought participants' perceptions of course materials, course resources, interactions, and similar aspects of on-line and traditional classroom-based courses. The instrument developed for this study can be found in Appendix A.

Scoring

The participants were asked to rate each item using a 5-point Likert-type scale, ranging from 1 for strongly disagree and 5 for strongly agree. The scores for each of the subscales were summed and divided by the number of items included on the subscale to obtain a mean score that reflected the original rating scale.

Validity

The researcher had three professors who have extensive experience in Internet teaching review the instrument to determine face validity. They were asked to review the items and comment on any that they felt were inappropriate or ambiguous. They were also asked to provide any additional items that should have been added to the survey, as well as delete any that did not add to the validity of the instrument. The comments from the three validators were compared to determine similarities and discrepancies in their comments and recommendations. Their changes were made prior to conducting the pilot study.

The attitudinal items were used in a principal components analysis with a varimax rotation to determine if components could be used to explain student perceptions of the preparedness and viability of on-line coursework. To be retained on a component, an item had to have a minimum component loading of .40 and could not load on more than one component. The eigenvalues for each component had to be greater than 1.00, indicating that the amount of variance explained by the component was of practical significance. The components that emerged from the principal component analysis were used as subscales to address the research questions. Complete results of the principal components analysis can be found in Appendix B.

Reliability

The reliability of the instrument was determined using Cronbach split-half analysis. The alpha coefficient for the instrument was .94, indicating the instrument had good internal consistency as a measure of reliability.

Pilot Study

Because the original instrument had not been used in prior research, the researcher conducted a pilot test with 39 students enrolled in Fall 2004 programs. These students were asked to complete the instrument, indicate the length of time needed to answer all items, and provide feedback regarding ambiguity of the items. Their responses were evaluated to determine if any of the items needed to be changed prior to distributing the survey to the students included in the sample.

The results of the pilot test indicated that students did not have problems with the items as worded. They were able to complete the survey within 10 to 20 minutes and had no difficulty in returning it via the Internet. A Cronbach alpha coefficient was obtained on the 53 items that were addressed using a Likert scale. The resultant alpha coefficient of .85 provided evidence that these items had adequate internal consistency for use in this study.

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Data Collection Procedures

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Following approval from the college administration and the Wayne State University Human Investigation Committee (HIC), the researcher started data collection. An information letter and copy of the survey were presented via "Educator" (a program similar to "Blackboard") to all students enrolled in on-line courses. The information letter included all elements of an informed consent form as suggested by HIC, such as:

purpose of the study, procedures for participation, assurances of confidentiality, voluntary nature of participation, benefits and risks associated with participation, and procedures for confidential return of the completed surveys. (See Appendix C for a copy of the information letter.)

All students enrolled on-line in the institution were asked to complete the survey within five days. One week following initial distribution of the survey, a reminder was sent to nonrespondents to encourage them to participate. The survey and information letter remained on "Educator." To further encourage their participation, the researcher offered students the opportunity to participate in a drawing for two $100 prizes.

Survey packets were distributed to students enrolled in traditional classrooms during their classes. They were given time to complete the survey during the class period. They returned the completed survey to their instructor before leaving their class.

Data Analysis

Data collected from the surveys were entered into a computer file for analysis using SPSS – Windows, ver. 13.0. The data analyses were divided into three sections. The first section provided a description of the sample using frequency distributions, cross tabulations, and measures of central tendency and dispersion. The second section used measures of central tendency and dispersion to provide baseline information on the subscales that emerged from the principal components analysis. The inferential statistical analyses that were used to address the research questions and test the hypotheses are presented in the final section of the data analysis. The inferential tests include one sample t-tests and multivariate analysis of variance (MANOVA). All decisions on the statistical significance of the findings were made using a criterion alpha level of .05.

Figure 1 presents the statistical analyses that were used to address the research

questions and test the hypotheses.

Figure 1

Statistical Analysis

Research Question	Variables	Statistical Analysis
To what extent do students involved in distance learning perceive that this method of course delivery is a viable alternative to traditional classroom delivery?	Student perceptions of on-line learning as a viable alternative to traditional classroom delivery of instruction	A one sample t-test was used to determine the extent to which student perceptions of on-line learning as a viable alternative to traditional classroom delivery of instruction differ from the neutral point
1: To what extent do students perceive that they were adequately prepared to complete coursework using an on-line instructional delivery system? 1a: Is there a difference in male and female students' perceptions regarding their preparation to complete coursework using an on-line instructional delivery system? 1b: Is there a difference in students' perceptions regarding their preparation to complete coursework using an on-line instructional delivery system relative to their age? 1c: Is there a difference in students' perceptions regarding their preparation to complete coursework using an on-line instructional delivery system relative to their employment status (working full or part time or not working)?	Dependent Variables Subscales measuring perceptions of the adequacy of preparation to complete coursework using an on-line instructional delivery system • Positive perceptions of on-line learning • Negative perceptions of on-line learning • Satisfaction with instructor • Faculty responsiveness • Chat sessions • Learning styles • Student resources • Relationship with instructor Independent Variables Gender Age Employment Status	A factorial multivariate analysis of variance (MANOVA) was used to determine if there are differences in perceptions of the adequacy of preparation to complete coursework using an on-line instructional delivery system. The interaction effects also were examined. If statistically significant effects are found on the MANOVA, the univariate analyses were examined to determine which of the subscales are contributing to the statistically significant omnibus F. Appropriate post hoc tests were used to determine how the main effects and interaction effects were contributing to the statistically significant differences on the subscales.

Research Question	Variables	Statistical Analysis
2. Is there a difference in perceptions of on-line coursework between students who completed their coursework on-line and those who completed their coursework in a traditional course?	Dependent Variables Subscales measuring perceptions of the adequacy of preparation to complete coursework using an on-line instructional delivery system • Positive perceptions of on-line learning • Negative perceptions of on-line learning • Satisfaction with instructor • Faculty responsiveness • Chat sessions • Learning styles • Student resources Relationship with instructor Independent Variable Type of student • Enrolled in on-line courses • Enrolled in traditional courses	A one-way multivariate analysis of variance (MANOVA) was used to test for differences in perceptions of the adequacy of preparation to complete coursework using an on-line instructional delivery system between students who had completed on-line courses and those who had not completed these types of courses. If statistically significant effects were found on the MANOVA, the univariate analyses were examined to determine which of the subscales were contributing to the statistically significant omnibus F. The mean scores for each of the groups were compared to determine the direction of the differences between students who completed coursework on-line and those who were in traditional courses.

Chapter 4

Results of Data Analysis

Introduction

The results of the data analyses that were used to describe the sample and address

the research questions are presented in this chapter. The data analyses are divided into

three sections. The first section uses crosstabulations and measures of central tendency

and dispersion to provide a profile of the participants in the study. The second section

describes the subscales of the instrument using descriptive statistics. The statistical

analyses related to research questions and hypotheses are included in the third section.

The purpose of this study was to examine students' perceptions of on-line courses

in bachelor and masters of business administration programs at a private business college

and to determine if relationships exist in their perceptions of their preparedness for the on-

line course, the viability of on-line courses compared with traditional classroom-based

courses, and their overall satisfaction levels with the on-line experience. In addition, the

study focused on determining if there were any significant differences in these perceptions

based on demographic variables, such as gender, age, socioeconomic level, and

employment status.

Surveys and cover letters were distributed to 942 students enrolled in on-line

coursework during the Winter 2005 semester. Of this number, 313 students completed and

returned their surveys via Survey Monkey. Thirty-two surveys were deleted because of

missing data that invalidated the responses. A total of 281 surveys were considered

usable for a response rate of 29.8%. In addition, 200 survey packets were distributed to

students enrolled in traditional courses at the college. Completed surveys were returned

by 160 of the students for a response rate of 80.0%.

Description of the Participants

The students were asked to provide their gender, age, and marital status on the demographic survey. The responses to these questions were crosstabulated by type of student (on-line or traditional). Table 2 presents results of these analyses.

Table 2

Crosstabulations
Personal Characteristics by Type of Student

| Personal Characteristics | Type of Student | | | | Total | |
| | On-line (n = 281) | | Traditional (n = 160) | | | |
	N	%	N	%	N	%
Gender						
Male	123	43.9	86	57.3	209	48.6
Female	157	56.1	64	42.7	221	51.4
Missing	(1)		(10)		(11)	
Age						
Less than 22	6	2.1	6	3.8	12	2.7
22 to 29	106	37.9	72	45.0	178	40.5
30 to 39	105	37.5	56	35.0	161	36.6
40 to 49	50	17.9	20	12.5	70	15.9
50 to 59	11	3.9	5	3.1	16	3.6
Over 59	2	0.7	1	0.6	3	0.7
Missing	(1)		(0)		(1)	
Marital Status						
Single	122	43.7	96	61.1	218	50.0
Married	146	52.3	55	35.0	201	46.1
Single Parent	11	4.0	6	3.9	17	3.9
Missing	(2)		(3)		(5)	

The majority of students in the on-line group were female (n=157, 56.1%). Males (n=86, 57.3%) comprised the largest group of students in the traditional group. One student in the on-line group and 10 students in the traditional group did not provide a response to this question.

One-hundred and six (37.9%) students in the on-line group were between 22 and 29 years of age, with 105 (37.5%) reporting their ages were between 30 and 39 years.

Seventy-two (45.0%) students in the traditional group were between 22 and 29 years of age, with 56 (35.0%) indicating their ages were between 30 and 39 years of age. One student in the on-line group did not provide a response to this question.

The majority of the students in the on-line group (n=146, 52.3%) were married, while 96 (61.1%) of students in the traditional group reported their marital status as single. Two students in the on-line group and 3 students in the traditional group did not provide a response to this question.

The students were asked to provide information regarding their work experiences. Their responses to these questions were crosstabulated by type of student, on-line or traditional. Table 3 presents results of these analyses.

Table 3

Crosstabulations
Work Experiences by Type of Student

| Work Experiences | Type of Student | | | | Total | |
| | On-line (n = 281) | | Traditional (n = 160) | | | |
	N	%	N	%	N	%
Employment Status						
Full-time	232	83.2	105	67.7	337	77.6
Part-time	26	9.3	27	17.4	53	12.2
Not working	21	7.5	23	14.8	44	10.1
Missing	(2)		(5)		(7)	
Annual Income						
Less than $15,000	27	9.7	17	11.7	44	10.5
$15,000 to $30,000	23	8.3	27	18.6	50	11.8
$31,000 to $50,000	75	27.2	44	30.3	119	28.3
$51,000 to $75,000	78	28.3	25	17.2	103	24.5
$76,000 to $100,000	49	17.8	22	15.2	71	16.8
More than $100,000	24	8.7	10	6.9	34	8.1
Missing	(3)		(15)		(18)	

The majority of students in both the on-line group (n=232, 83.2%) and traditional group (n=105, 67.7%) were working full-time. Part-time employment was reported by 26

(9.3%) students in the on-line group and 27 (17.4%) students in the traditional group. Two students in the on-line group and 5 students in the traditional group did not provide a response to this question.

The largest group of students in the on-line group (n = 78, 28.3%) were earning between $51,000 and $75,000 annually, with 75 (27.2%) reporting their earnings were between $31,000 and $50,000 annually. Among student in the traditional group, 44 (30.3%) students were earning between $31,000 and $50,000 annually. Twenty-four (8.7%) students in the on-line group and 10 (6.9%) students in the traditional group reported annual earning in excess of $100,000. Three students in the on-line group and 15 students in the traditional group did not provide a response to this question.

The students were asked if they were receiving financial aid. Their responses were crosstabulated by type of student for presentation in Table 4.

Table 4

Crosstabulations
Receiving Financial Aid by Type of Student

| Receiving Financial Aid | Type of Student | | | | Total | |
| | On-line (n = 281) | | Traditional (n = 160) | | | |
	N	%	N	%	N	%
Yes	100	35.7	63	40.1	163	37.3
No	180	64.3	94	59.9	274	62.7

Missing On-line 1
          Traditional 3

The majority of students in both the on-line group (n=180, 62.7%) and traditional group (n=94, 59.9%) were not receiving financial aid. One student in the on-line group and 3 students in the traditional group did not provide a response to this question.

The students were asked if they were taking their first on-line course. Their responses were crosstabulated by type of student. The results of this analysis are presented in Table 5.

Table 5

Crosstabulations
First On-line Course by Type of Student

| First On-line Course | Type of Student | | | | Total | |
| | On-line (n = 281) | | Traditional (n = 160) | | | |
	N	%	N	%	N	%
Yes	64	22.9	19	18.1	83	21.6
No	216	77.1	86	81.9	302	78.4

Missing   On-line   1
                   Traditional 55

The majority of students in the on-line group (n=216, 77.1%) and the traditional group (n=86, 81.9%) were not taking their first on-line course. One student in the on-line group and 55 students in the traditional group did not provide a response to this question.

The students were asked to provide information on the number of courses they had completed both in a traditional classroom and on-line. Their responses were summarized using descriptive statistics. Table 6 presents results of this analysis.

Table 6

Descriptive Statistics
Number of Hours of Traditional and On-line Classes

Number of Courses	Number	Mean	SD	Median	Range	
					Minimum	Maximum
Number of courses completed in traditional classroom						
On-line	252	12.73	13.85	8	0	82
Traditional	140	6.67	8.96	4	0	60
Number of courses completed in traditional classroom (Winter 2005)						
On-line	253	.99	.95	1	0	4
Traditional	153	1.90	1.05	2	0	5
Number of courses completed on-line						
On-line	253	3.49	3.51	2	0	20
Traditional	150	1.07	1.74	0	0	10
Number of courses completed on-line (Winter 2005)						
On-line	253	1.08	.73	1	0	3
Traditional	150	.35	.66	0	0	4

The students in the on-line group had completed a mean of 12.73 (sd=13.85)

courses in a traditional classroom. The range of courses completed in a traditional

classroom ranged from 0 to 82. The mean number of courses completed by students in

the traditional group was 6.67 (sd=8.96). The range of courses completed by students in

the traditional group was from 0 to 60. Twenty-nine students in the on-line group and 20

students in the traditional group did not provide a response to this question.

The students in the on-line group reported they were completing a mean of .99

(sd=.95) courses in a traditional classroom during the Winter 2005 semester. The range of

courses completed during this semester in a traditional classroom ranged from 0 to 4.

Students in the traditional group were completing a mean of 1.90 (sd=1.05) courses in a

traditional classroom during the Winter 2005 semester. The range of courses taken during the Winter 2005 was from 0 to 5.

The number of courses taken on-line by the students in the on-line group ranged from 0 to 20, with a median of 2 courses. The mean number of courses that were taken by this group was 3.49 (sd=3.51) courses. Students in the traditional group had completed a mean of 1.07 (sd=1.74) courses on-line. The number of courses ranged from 0 to 10 courses, with a median of 0.

The number of courses that students in the on-line group were taking in the Winter 2005 semester was 1.08 (sd=.73). The range in the number of on-line courses being taken during this semester was from 0 to 3. Students in the traditional group were taking an average of .35 (sd=.66) courses on-line during the Winter 2005 semester. The range of the number of courses these students were taking during this semester was from 0 to 4.

The students were asked to provide information on the age of their home computer and their home connections. The responses to these questions were summarized using crosstabulations for presentation in Table 7.

Table 7

Crosstabulations
Home Computer by Type of Student

Home Computer	Type of Student				Total	
	On-line (n = 281)		Traditional (n = 160)			
	N	%	N	%	N	%
Age of Home Computer						
Less than 6 months	37	13.2	27	16.8	64	14.5
6 months to 1 year	71	25.4	36	22.5	107	24.3
2 years	82	29.3	43	26.8	125	28.4
3 years	36	12.9	22	13.8	58	13.2
More than 3 years	50	17.8	26	16.3	76	17.3
Do not own a PC	4	1.4	6	3.8	10	2.3
Missing	(1)				(1)	
Type of Internet Connection						
Dialup Modem < 33.6 kbps	17	6.1	11	6.9	28	6.4
Dialup Modem > 33.6 kbps	32	11.4	18	11.3	50	11.4
DSL	50	17.9	24	15.1	74	16.8
Cable	172	61.4	93	58.5	265	60.4
Not connected to Internet	9	3.2	13	8.2	22	5.0
Missing	(1)		(1)		(2)	
Have a Home Network						
Yes	128	45.7	67	42.7	195	44.6
No	129	46.1	78	49.7	207	47.4
Don't Know	20	7.1	6	3.8	26	5.9
NA	3	1.1	6	3.8	9	2.1
Missing	(1)		(3)		(4)	
Own a Laptop						
Yes	138	49.3	79	50.0	217	49.5
No	142	50.7	79	50.0	221	50.5
Missing	(1)		(2)		(3)	
My company provides a laptop for my use						
Yes	110	39.4	43	27.6	153	35.2
No	169	60.6	113	72.4	282	64.8
Missing	(2)		(4)		(6)	
Self-reported technical proficiency						
Expert	1	.4	2	1.3	3	.7
Moderately proficient	36	14.2	19	11.9	55	12.7
Proficient	72	25.5	41	25.6	113	26.0
Somewhat proficient	108	40.1	62	38.7	170	39.2
Not proficient	57	19.8	36	22.5	93	21.4
Missing	(7)				(7)	

The largest group of on-line students (n=82, 29.3%) reported their computers were 2 years old, with 71 (25.4%) students indicating their computers were 6 months to 1 year old. Among students in the traditional classes, 43 (26.8%) had computers that were 2 years old and 36 (22.5%) students' computers were from 6 months to 1 year old. Four (1.4%) students in the on-line group and 6 (3.8%) students in the traditional program did not own a computer. One student in the on-line group did not provide a response to this question.

When asked what type of Internet connection students had at home, 172 (61.4%) in the on-line group and 93 (58.5%) in the traditional group reported they had cable internet connections. Nine (3.2%) students in the on-line group and 13 (8.2%) students in the traditional group were not connected to the Internet. One student in the on-line group and 1 student in the traditional group did not provide a response to this question.

The largest group of students in both the on-line group (n=129, 46.1%) and traditional group (n=78, 49.7%) reported they did not have a home network. One-hundred and twenty-eight (45.7%) students in the on-line group had home networks and 67 (42.7%) in the traditional group had home networks. One student in the on-line group and 3 students in the traditional group did not provide a response to this question.

The majority of students (n=221, 50.5%) reported that they did not own a laptop. This number included 142 (50.7%) students in the on-line group and 79 (50.0%) students in the traditional group. One student in the on-line group and 2 students in the traditional group did not provide a response to this question.

When asked if their companies provided a laptop for this use, the majority of students (n=282, 64.8%) indicated no. This number included 169 (60.6%) students in the on-line group and 113 (72.4%) students in the traditional group. Two students in the on-

line group and 4 students in the traditional group did not provide a response to this question.

The largest group of students in the on-line group (n=108, 39.4%) self-reported their technical proficiency as somewhat, with 62 (38.7%) students in the traditional group reporting this level of proficiency. One (0.4%) student in the on-line group and 2 (1.3%) students in the traditional group indicated that they were experts in terms of self-reported technical proficiency. Seven students in the on-line group did not provide a response to this question.

The students were asked to indicate the level of the program in which they were enrolled. Their responses were crosstabulated by program level. Table 8 presents results of this analysis.

Table 8

Crosstabulations
Program Level by Type of Student

Program Level	Type of Student				Total	
	On-line (n = 281)		Traditional (n = 160)			
	N	%	N	%	N	%
Undergraduate	73	26.2	56	35.0	129	29.4
Graduate	204	73.1	100	62.5	304	69.2
Certificate	2	0.7	4	2.5	6	1.4

Missing On-line 2

The majority of participants (n=304, 69.2%) indicated they were in graduate programs. This number included 204 (73.1%) students in the on-line group and 100 (62.5%) students in the traditional group. Two (0.7%) of the students in the on-line group

and 4 (2.5%) students in the traditional group reported they were pursuing certificates.

Two students in the on-line group did not provide a response to this question.

Description of the Scaled Variables

The 53 items on the survey were used in a principal components analysis to determine if components would emerge that could be used as subscales in addressing the research questions developed for the study. Eight components emerged from the analysis explaining 64.71% of the variance in perceptions of on-line courses. Mean scores were obtained for each of the eight subscales by summing the numeric responses and dividing by the number of items on the subscale. Possible scores could range from 0 to 5, with higher scores indicating greater agreement with the items included on the subscale. Descriptive statistics were used to provide baseline information for each of the subscales. Table 9 presents results of these analyses.

Table 9

Descriptive Statistics
Perceptions of On-line Courses

Subscale	Number	Mean	SD	Median	Range	
					Minimum	Maximum
Positive perceptions of on-line learning	438	3.11	1.22	3.48	0	5
Negative perceptions of on-line learning	435	3.13	1.20	3.33	0	5
Satisfaction with instructor	436	3.53	.93	3.71	0	5
Faculty responsiveness	439	3.91	.78	4.00	0	5
Chat sessions	433	2.25	1.49	3.00	0	5
Learning styles	437	3.80	.71	4.00	0	5
Student resources	439	3.29	1.20	3.67	0	5
Relationship with instructor	438	3.30	1.26	3.50	0	5

Positive perceptions of on-line learning. This scale measured general positive items that were associated with on-line learning. The mean score for this subscale was 3.11 (sd=1.22), with a median score of 3.48. Actual mean scores ranged from 0 to 5.

Negative perceptions of on-line learning. This subscale measured negative items associated with on-line learning. Actual mean scores on this subscale ranged from 0 to 5, with a median score of 3.33. The mean score for negative perceptions was 3.13 (sd=1.20).

Satisfaction with instructor. The students' satisfaction with the instructor was measured on this subscale. The mean score for satisfaction with instructor was 3.53 (sd=.93), with a median score of 3.71. Actual mean scores ranged from 0 to 5.

Faculty responsiveness. The responsiveness to student questions and needs were addressed in this subscale. The mean score was 3.91 (sd=.78), with a median of 4.00. The range of actual mean scores was from 0 to 5.

Chat sessions. Students' perceptions of chat sessions associated with on-line learning were measured with the items on this subscale. The mean score was 2.25 (sd=1.49), with a median score of 3.00. The actual mean scores ranged from 0 to 5.

Learning styles. Instructor's awareness of specific learning styles of students was the focus of this subscale. Actual mean scores ranged from 0 to 5, with a median of 4.00. The mean for this subscale was 3.80 (sd=.71).

Student resources. Student perceptions of on-line student access to college resources was measured on this subscale. The mean score on this subscale was 3.29 (sd=1.20), with a median of 3.67. The actual mean scores ranged from 0 to 5.

Relationship with instructor. The items on this subscale measured the students' perceptions of their interactions with their instructor. The mean score on this subscale was 3.30 (sd=1.26), with a median score of 3.50. Actual mean scores ranged from 0 to 5.

Research Questions

One major research question and two subquestions were developed for this study.

Inferential statistical analyses were used to address these questions. All decisions on the

statistical significance of the findings were made using an alpha level of .05.

The primary research question. To what extent do students involved in on-line learning perceive that this method of course delivery is a viable alternative to traditional classroom delivery?

The mean scores on the eight subscales for students enrolled in on-line courses

were compared to the mid-point of 2.5. Scores that were significantly above 2.5 were

indicative of greater agreement with the subscale, while scores that were significantly

below 2.5 were indicative of greater disagreement with the subscale. Table 10 presents

results of this analysis.

Table 10

t-Tests for One Sample
Perceptions of On-line Courses
(Students in On-line Courses Only)

Subscale (N=281)	Number	Mean	SD	DF	t-Value	Sig of t
Positive perceptions of on-line learning	281	3.56	.64	280	27.72	<.001
Negative perceptions of on-line learning	281	3.42	.84	280	18.19	<.001
Satisfaction with instructor	281	3.60	.70	280	26.35	<.001
Faculty responsiveness	281	3.96	.65	280	37.67	<.001
Chat sessions	281	2.55	1.36	280	.56	.573
Learning styles	281	3.81	.46	280	47.92	<.001
Student resources	281	3.27	1.14	280	11.31	<.001
Relationship with instructor	280	3.13	1.09	279	9.59	<.001

Seven of the eight subscales measuring perceptions of on-line courses were

significantly above the mid-point of 2.5. The mean score for chat sessions of 2.55

(sd=1.36) was above the mid-point of 2.5, but the difference was not statistically significant. An examination of the mean scores indicated that students were most positive about faculty responsiveness (m=3.96, sd=.65), learning styles (m=3.81, sd=.46), and satisfaction with instructor (m=3.60, sd=.70). Based on these findings, it appears that students enrolled in on-line courses generally have positive perceptions of their on-line learning experiences.

> *Question 1*:   To what extent do students perceive that they were adequately prepared to complete coursework using an on-line instructional delivery system?

> *Question 1a*: Is there a difference in male and female students' perceptions regarding their preparation to complete coursework using an on-line instructional delivery system?

> *Question 1b*: Is there a difference in students' perceptions regarding their preparation to complete coursework using an on-line instructional delivery system relative to their age?

> *Question 1c*: Is there an interaction effect in students' perceptions regarding their preparation to complete coursework using an on-line instructional delivery system relative to their gender and age?

The mean scores for the eight subscales measuring perceptions of on-line learning were used as dependent variables in a factorial multivariate analysis of variance (MANOVA). The age and gender of the students were used as independent variables in this analysis. Age was recoded into two levels, under 30 years of age and 30 years of age or over. The results of this analysis are presented in Table 11.

Table 11

Factorial Multivariate Analysis of Variance
Perceptions of On-line Learning by Age and Gender

Factor	Hotelling's Trace	F Ratio	DF	Sig of F
Age	.07	2.39	8, 269	.017
Gender	.20	6.77	8, 269	<.001
Age x Gender	.03	1.14	8, 269	.338

The Hotelling's trace of .07 obtained for the main effect of age was statistically significant F (8, 269) = 2.39, p = .017. This finding indicated that student's perceptions of on-line learning differed among students who were under 30 and those who were 30 and over. The second main effect of gender produced a statistically significant Hotelling's trace of .20 F (8, 269) = 6.77, p < .001. This result indicated that male and female students differed significantly in their perceptions of on-line learning. The Hotelling's trace of .03 obtained for the interaction effect of age x gender was not statistically significant F (8, 269) = 1.14, p = .338. To further explore the statistically significant differences in perceptions of on-line learning and age and gender, univariate F tests were examined. Descriptive statistics are also provided for each of the eight subscales. Table 12 presents results of these analyses for age of student. The analyses for gender are presented in Table 13.

Table 12

Univariate F Tests
Perceptions of On-line Learning by Age
(On-line Students Only)

Subscale (N=280)	Number	Mean	SD	F-ratio	Sig of F
Positive perceptions of on-line learning					
Under 30	112	3.58	.62	.01	.963
30 and over	168	3.53	.64		
Negative perceptions of on-line learning					
Under 30	112	3.36	.84	.04	.833
30 and over	168	3.45	.84		
Satisfaction with instructor					
Under 30	112	3.51	.75	2.37	.125
30 and over	168	3.66	.66		
Faculty responsiveness					
Under 30	112	3.95	.68	.18	.672
30 and over	168	3.96	.63		
Chat sessions					
Under 30	112	2.48	1.37	.15	.699
30 and over	168	2.59	1.35		
Learning styles					
Under 30	112	3.85	.45	1.75	.187
30 and over	168	3.79	.47		
Student resources					
Under 30	112	3.06	1.27	8.06	.005
30 and over	168	3.40	1.03		
Relationship with instructor					
Under 30	112	2.89	1.07	7.44	.007
30 and over	168	3.28	1.08		

Missing 1

Two of the eight subscales differed between the students who were under 30 years of age and those who were 30 years of age and older. The comparison of mean scores for student resources between students who were under 30 years of age (m = 3.06, sd = 1.27) and those who were 30 years of age and over (m = 3.40, sd = 1.03) was statistically significant F (1, 276) = 8.06, p = .005. Students who were 30 years of age and older appeared to have more positive perceptions of the availability of student resources than students who are under 30 years of age.

The relationship with instructor differed significantly between students who were under 30 years of age (m = 2.89, sd = 1.07) and those who were 30 years of age and older (m = 3.28, sd = 1.08) $F (1, 276) = 7.44$, $p = .007$. Students who were 30 years of age and older appeared to have more positive perceptions of their relationships with their instructors.

Similar analyses were completed between the male and female students. Table 13 presents results of these analyses.

Table 13

Univariate F Tests
Perceptions of On-line Learning by Gender
(On-line students Only)

Subscale (N=280)	Number	Mean	SD	F-ratio	Sig of F
Positive perceptions of on-line learning Male Female	123 157	3.36 3.70	.86 .79	17.86	<.001
Negative perceptions of on-line learning Male Female	123 157	3.68 3.21	.78 .83	21.64	<.001
Satisfaction with instructor Male Female	123 157	3.57 3.62	.67 .72	.10	.756
Faculty responsiveness Male Female	123 157	3.89 4.01	.71 .59	2.91	.089
Chat sessions Male Female	123 157	2.62 2.49	1.26 1.43	.67	.415
Learning styles Male Female	123 157	3.85 3.79	.44 .48	1.59	.208
Student resources Male Female	123 157	3.08 3.41	1.20 1.07	8.00	.005
Relationship with instructor Male Female	123 157	3.26 3.02	1.14 1.04	1.73	.189

Missing 1

Three subscales of perceptions of on-line learning; positive perceptions of on-line learning, $F(1, 276) = 17.86$, $p < .001$; negative perceptions of on-line learning, $F(1, 276) = 21.64$, $p < .001$; and student resources, $F(1, 276) = 8.00$, $p = .005$; showed statistically significant differences between male and female students. Female students (m = 3.70, sd = .79) had significantly higher scores for perceptions of on-line learning than male students (m = 3.36, sd = .86). Male students (m = 3.68, sd = .78) had significantly higher scores for negative perceptions of on-line learning than female students (m = 3.21, sd = .83). Female

students (m = 3.41, sd = 1.07) had significantly higher scores for student resources than male students (m = 3.08, sd = 1.20). The remaining subscales; satisfaction with instructor, faculty responsiveness, chat sessions, learning styles, and relationship with the instructor; did not differ for male and female students. Based on these findings, no decision could be made on differences between perceptions of male and female students who were enrolled in on-line courses.

> *Question 2*: Is there a difference in perceptions of on-line coursework between students who completed their coursework on-line and those who completed their coursework in a traditional course?

The eight subscales measuring perceptions of on-line coursework were used as dependent variables in a one-way multivariate analysis of variance. The type of student, enrolled in on-line courses and enrolled in traditional courses, was used as the independent variable. Table 14 presents results of this analysis.

Table 14

One-way Multivariate Analysis of Variance
Perceptions of On-line Learning by Age and Gender

Factor	Hotelling's Trace	F Ratio	DF	Sig of F
Type of Student	.46	24.06	8, 423	<.001

The Hotelling's trace of .46 obtained on the one-way MANOVA was statistically significant, F (8, 423) = 24.06, p < .001. This finding indicated a statistically significant difference between students enrolled in on-line courses and those enrolled in traditional courses in their perceptions of on-line learning. To further explore this statistically significant difference, univariate F tests were interpreted. Descriptive statistics were also obtained for the two groups. Table 15 presents results of this analysis.

Table 15

Univariate F Tests
Perceptions of On-line Learning by Type of Student

Subscale (N=432)	Number	Mean	SD	F-ratio	Sig of F

Positive perceptions of on-line learning
  On-line students
  Traditional students
	
	280
	152
		
		3.55
		2.26
			
			.64
			1.55
				
				147.81
					
					<.001

Negative perceptions of on-line learning
  On-line students
  Traditional students
	
	280
	152
		
		3.42
		2.58
			
			.84
			1.53
				
				53.78
					
					<.001

Satisfaction with instructor
  On-line students
  Traditional students
	
	280
	152
		
		3.60
		3.39
			
			.70
			1.23
				
				5.22
					
					.023

Faculty responsiveness
  On-line students
  Traditional students
	
	280
	152
		
		3.96
		3.81
			
			.65
			.97
				
				3.53
					
					.061

Chat sessions
  On-line students
  Traditional students
	
	280
	152
		
		2.54
		1.70
			
			1.36
			1.57
				
				34.25
					
					<.001

Learning styles
  On-line students
  Traditional students
	
	280
	152
		
		3.82
		3.75
			
			.46
			1.03
				
				.84
					
					.360

Student resources
  On-line students
  Traditional students
	
	280
	152
		
		3.27
		3.33
			
			1.14
			1.29
				
				.33
					
					.567

Relationship with instructor
  On-line students
  Traditional students
	
	280
	152
		
		3.13
		3.60
			
			1.09
			1.49
				
				14.26
					
					<.001

Missing 1

Five subscales differed significantly between on-line and traditional students.

Positive perceptions of on-line learning differed significantly, $F (1, 432) = 147.81$, $p < .001$, with on-line students (m = 3.55, sd = .64) having higher scores on this subscale than traditional students (m = 2.26, sd = 1.55). The comparison of negative perceptions of on-line learning between on-line students (m = 3.42, sd = .84) and traditional students (m = 2.58, sd = 1.53) was statistically significant, $F (1, 432) = 53.78$, $p < .001$. The differences between on-line students (m = 3.60, sd = .70) and traditional students (m = 3.39, sd = 1.23) for satisfaction with instructor were statistically significant, $F (1, 432) = 5.22$, $p =$

.023. Perceptions of chat sessions differed significantly between the two types of students, $F (1, 432) = 34.25$, $p < .001$, with on-line students (m = 2.54, sd = 1.36) having higher scores than traditional students (m = 1.70, sd = 1.57). On-line students (m = 3.13, sd = 1.09) and traditional students (m = 3.60, sd = 1.49) differed significantly in their perceptions of relationships with their instructors $F (1, 432) = 14.26$, $p < .001$. The remaining subscales, faculty responsiveness, learning styles, and student resources did not differ significantly between the two types of students. Based on these findings, it appears that students who were enrolled in on-line courses had more agreement with each of the subscales than students who were enrolled in traditional courses.

Summary

The statistical analyses that were used to summarize the data, describe the sample, and address the research questions have been presented in this chapter. The conclusions and recommendations developed from these findings are included in Chapter 5.

Chapter 5

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

Summary

This chapter includes a brief restatement of the problem for the study, a summary review of the major elements of the research study, and a discussion of the findings. Conclusions based on the results of the statistical data analysis are provided, as well as recommendations for further study.

In the last decade, with the growth of Internet technology, both graduate and undergraduate business students have gained unprecedented access to business curricula using a variety of instructional delivery systems offered by educational institutions. For example, Massachusetts Institute of Technology (MIT) developed the OpenCourseWare concept aimed at making course materials for MIT's entire curriculum freely available on the Web (Olsen, 2002, p. 31).

Although much has been published about the trend toward on-line learning and perceptions of faculty, administrators, and educational planners regarding this trend, little has been published that addresses student perceptions of the viability of on-line learning as compared with traditional classroom-based learning. Educational planners and administrators need student feedback as they consider the use of new technologies and the investment that their institutions have to make for these technologies.

Research into the effectiveness of on-line learning and student satisfaction is experiencing growth in terms of methodological quality and identification of important variables. As this field of study continues to develop within the larger framework of research conducted on the viability of on-line learning, study of effectiveness and

satisfaction may result in improved instructional delivery. Models of distance teaching and learning continue to develop as part of a larger national effort of school reform at all levels. The use of technologically-supported learning is becoming more attractive to college administrators and boards as a cost effective method of providing instruction to a wider audience in accelerated instructional formats (McLoughlin, 2000).

The creation of a learning community is the goal for all educational institutions, with the interaction made possible in on-line environments providing a solid basis for such a community (Bober & Dennen, 2001). Moore (as cited in Huang, 2002), a major contributor of a conceptual model for on-line instruction, defined three dimensions of the instructional process: interactions, course structure, and autonomy. Studies to date have found that interactions between students and instructors have a significant influence on student satisfaction and perceptions regarding the quality of instruction and on-line learning. In Moore's view, interactions between students and peers can be a substantive contributor to the satisfaction equation. Learner interaction with the course content, particularly when delivered on-line, is a critical element, as this interaction is important to student-centered learning. The dimension of the course structure can have substantial effects on the depth and degree of student-instructor and student-student interactions, and on the extent of control and autonomy that learners experience in the on-line context. The third dimension, autonomy, is necessary in success of on-line learning and is directly related to the other two dimensions in Moore's model. To promote student satisfaction, interactions, course structure, and autonomy need to be considered when designing on-line learning programs.

Educators and scholars have moved from an andragogy versus pedagogy perspective toward a continuum that is bracketed by teacher-centered learning and student-centered learning. Merriam (2001) noted that the factor of the learning context has come to predominate more recent conceptual approaches to learning, encompassing what students bring to learning situations, how societal norms influence the structure of education, and physical, as well as virtual, environments in which students learn. A further development in the conceptual basis of adult learning has come from research on learning styles (Kolb as cited in Loo, 2002) that has roots in research on experiential learning (i.e., learning by doing) and is considered relevant to adult learning.

Public and private institutions of higher learning are under increasing pressure to remove barriers that traditionally restrict access to and success in college-level studies and to increasing equality of educational opportunities for all adult learners, regardless of their geographic location. Virtually every major university in the world either has or is considering some form of distance education program. Advances in technology make distance education much more feasible than it has ever been, and economic conditions, world-wide; require that alternatives to traditional campus-based classroom formats be developed.

Competitive pressures are forcing a reevaluation of the current mode of delivering learning. No one is really certain what the future has in store, but everyone is scrambling to define it in their terms in the hopes of attracting more students, in particular, the adult learner. Due to the rapid advances in technology, prior learning may be outdated before its first use. Employers are looking for workers who have current skills that can be applied to tomorrow's

technology. In many professions, entry requires an advanced degree to open the door. The future workforce is expected to be comprised of knowledge workers possessing advanced technology skills subject to continuous updating and refreshment.

Richard Vigilante, Director of the Virtual College at New York University's School of Continuing Education indicates that in today's electronically networked society it makes no sense for adults to be bound by time and place when it comes to learning essential new skills. According to Vigilante, demographics demand a just-in-time approach to higher education. "With adults over 25 now constituting the majority of college students in the United States, and with increasing demands being imposed on them for their professional and personal time, online education will likely be the only instructional alternative open to them" (NYU-CE web site, 2005).

Administrators and educators within the higher education community must make major investment decisions regarding the type of technology that is appropriate for the learning community they serve. Student feedback on the viability and effectiveness of the on-line learning experience is an essential ingredient for informed decisions regarding which technology is most appropriate and can serve student needs.

Discussion of Findings

The majority of participants in the on-line group were female, while more males were included in the traditional group. The students were generally between 22 and 39 in both groups. The largest group of students in the on-line group was married, while students in the traditional program generally were single. The majority of participants in both programs were working, with annual incomes ranging from $31,000 to $75,000.

Most of the students were not receiving financial aid in both groups. The majority of students in the on-line group and the traditional group reported they had taken on-line courses previously.

The largest group of students in both groups had computers that were less than 2 years old. They generally had cable Internet connections and did not have home networks. Approximately 50% of the students owned laptop computers, but were not provided the laptop computer by their company. They tended to self-report their technical expertise as somewhat proficient. The majority of students were enrolled in graduate programs.

Conclusions

The purpose of this study was to examine student perceptions of the viability of learning via an on-line delivery method as opposed to a traditional classroom delivery method. From the analysis of the data, the following conclusions were reached:

Students generally had positive perceptions of their on-line learning experience. Of the eight components that emerged from the principal components analysis, findings for seven were statistically significant in terms of perception by students of the on-line experience. In general, on-line students tended to have a favorable response to questions regarding faculty responsiveness, satisfaction with instructor, relationship with instructor, and faculty understanding of student learning styles. Traditional students tended to have a less favorable response to the same questions. These responses were not surprising, considering that participants in on-line learning favored a student-centered approach versus students in traditional programs who appeared to be more at ease with an instructor-centered environment.

Females, in general, had more negative perceptions of the on-line experience than their male counterparts. Both male and female students under 30 years of age had more negative perceptions of student resources than respondents 30 years of age or older. This finding could be due in part to the younger generation's acceptance and integration of technology into their daily lives, while students over 30 may be used to viewing technology as a tool. Males, in general, had a more favorable relationship with instructors than females. Respondents under 30 years of age appeared to have less favorable relationships (both genders) than respondents 30 years of age or older. This topic merits further investigation to examine the effects of cultural or generational factors on perceptions of on-line learning.

Approximately three-fourths of the respondents reported having a broadband connection in their homes to connect to the Internet. Two-thirds of the respondents reported having a home computer that was less than 2 years old. These factors are an indication that the majority of students are well prepared from a technical perspective to take advantage of bandwidth intensive multi-media components (e.g. streaming video) that could be used to enhance on-line learning experiences without the frustration of dealing with latency and performance issues.

A key aspect of the college's on-line learning tool is the ability to download weekly student packets for study off-line. These packets include multi-media presentations, including audio and video components that enhance learning modes and accommodate different learning styles. This tool allows students with laptop computers to learn anywhere, at any time. Almost half of the students reported owning a laptop computer – providing further evidence of a technologically-prepared student population.

Student's self-reported technical proficiency may be a cause for concern, as the majority of students (60.6%) indicated that they were only somewhat proficient or not proficient. The college may want to consider additional studies to determine the need for additional technical training to mitigate this situation.

Chat sessions, (moderated and unmoderated) as well as discussion groups using on-line tools do not appear to be very well received by students. Further study and analysis is indicated to determine the cause of the dissatisfaction with chat sessions and discussion groups.

Overall, students at this college appear to have the appropriate technology requirements in place to take advantage of the "anywhere – anytime" learning experience that can be provided via on-line learning methods and tools. The positive responses to instructor-related questions indicated that students perceived the faculty to be well prepared, responsive, understand different learning styles of on-line students, and establish the same type of relationship with their students as instructors in traditional delivery arenas.

Based on results of this study, as well as the review of the literature, it can be concluded that the on-line delivery methodology employed by the college is a viable alternative to traditional classroom delivery of instruction and should continue to be developed to provide access to a larger segment of the potential and current student population.

Limitations

The study was conducted using students in one private business college. Generalizations to students in other colleges/universities and other programs may not be relevant.

The use of a self-report instrument may have resulted in respondent bias. The participants in the study may have wanted to respond to the items in the way they thought the researcher wanted. While this concern is present in most self-report instruments, the participants may be aware of the position of the researcher as a professor at the college and wanted his research to be successful.

Recommendations for Practice

Based on the generally favorable responses by students regarding the viability of on-line learning and the fact that these classes tend to fill very quickly, it is recommended that the college consider adding additional courses and sections of courses to the list of available courses in the on-line format. Further, the college should consider accelerating training of faculty to deliver courses on-line and assure a backup pool of on-line trained faculty is available to meet the increasing student demands for courses delivered in the on-line format.

From results of the analysis, discussion groups and on-line chat sessions are not meeting the needs of students. The college should consider additional professional development for faculty in moderating synchronous discussion groups and chat sessions. A survey should be developed for students to determine the actual cause of their dissatisfaction and obtain suggestions to improve these on-line activities. The cause of the dissatisfaction may be related to incomplete understanding of the tools by both students and instructors. Professional development programs can provide an opportunity to mitigate some of the negative perceptions, while the survey is being developed and administered.

The college administration should consider offering a series of workshops or a complete course to improve technical capabilities of students participating in on-line

courses. This type of course could improve student perception regarding their lack of technical proficiency thereby providing opportunities for greater academic success.

Recommendations for Further Research

On-line delivery of quality instruction is still in the infancy stage and requires additional research to gain a better understanding of student perceptions that will provide the basis for future expansion of course offerings and instructor training. The following recommendations are made for further research:

1. Develop a study to gain an understanding why older students tend to have a better relationship with their instructors.

2. Determine why younger students think that student resources are not as adequate as older students perceive.

3. Develop a study to determine the difference in perception between male and female students regarding student resources.

4. Research the difference between male and female perceptions regarding the viability of on-line learning delivery.

5. Study the perceptions of traditional students regarding their negative perceptions of on-line learning to gain a better understanding of changes that may be necessary in on-line delivery to reverse these perceptions.

Appendix A

Survey

Demographic Background Information				
Gender	❏ Male	❏ Female		
Age group	❏ <22			
	❏ 22 - 29			
	❏ 30 - 39			
	❏ 40 -49			
	❏ 50 -59			
	❏ >59			
Marital Status	❏ Single	❏ Married	❏ Single Parent	
Employment Status	❏ Full Time	❏ Part Time	❏ Not Working	
	If part time – how many hours per week:			
Which group describes your annual income	❏ <$15,000			
	❏ $15,000 - 30,000			
	❏ 31,000 - 50,000			
	❏ 51,000 - 75,000			
	❏ 76,000 - 100,000			
	❏ >100,000			
Are you receiving any financial aid?	❏ Yes	❏ No		
Is this your first on-line course?	❏ Yes	❏ No		
Course Information	How many courses have you **completed** in the classroom?		How many courses are you taking this semester in the classroom?	
	How many courses have you **completed** online?		How many courses are you taking this semester online?	
My PC at home is:	❏ < 6 months old		❏ 6 months - 1 year old	
	❏ 2 years old		❏ 3 years old	
	❏ >3 years old		❏ Don't own a PC	
I use the following to connect to the Internet	❏ Dial up Modem < 33.6 Kbps	❏ Dial up Modem >33.6 Kbps	❏ DSL	❏ Cable	❏ I am not connected at home
I have a home network	❏ Yes	❏ No	❏ Don't Know	❏ NA	
I own a laptop	❏ Yes	❏ No		
My company provides a laptop for my use	❏ Yes	❏ No		
How technically proficient do you consider yourself to be?	❏ Expert	❏ Moderately Proficient	❏ Proficient	❏ Somewhat Proficient	❏ Not Proficient

Academic Status	Undergraduate	Graduate	Certificate
Academic Program in which your are currently enrolled (check only one)	❑ Accountancy	❑ Accountancy	❑ Certified Financial Planner
	❑ Business Administration	❑ Business Information Technology	❑ e-Commerce
	❑ BBA in Business Information Technology	❑ Economics	❑ e-Marketing
	❑ BS in Business Information Technology	❑ Finance	❑ Enterprise Systems
	❑ Finance	❑ Management	❑ Human Resource Management
	❑ General Business	❑ Managing Manufacturing Operations	❑ Information Assurance
	❑ Management	❑ MBA	❑ Management
	❑ Marketing	❑ Taxation	❑ Managing Manufacturing Operations
			❑ Project Management
			❑ Taxation

Please use the following guide for your answers:

NA	1	2	3	4	5
Not applicable	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

Place a check mark in the column that most closely matches your agreement with each of the following statements:	NA	1	2	3	4	5
I have met my instructor in person						
My instructor cares about my success						
Online library resources are available						
Library staff are helpful						
Faculty are fair when grading assignments						
I am able to register for my classes online						
Tutoring services are available						
Faculty provide timely feedback about my progress in the course						
Faculty consider different learning styles when teaching an online course						

Place a check mark in the column that most closely matches your agreement with each of the following statements:	NA	1	2	3	4	5
Faculty are competent						
Faculty are available for consultation at reasonable times						
There are no discernible differences in what I learned between online courses and traditional courses						
The instructions received in online courses are similar to those in traditional courses						
The quality of instruction is excellent						
My technical skills are adequate for the online learning experience						
The online orientation provided the skills necessary to navigate efficiently through the course tool						
The course tool is intuitive and easy to use						
The course tool is available as needed						
The instructor provides assignments on a timely basis						
The instructor returns assignments in a timely manner.						
Chat rooms allow for discussion among students enrolled in the online course.						
Instructors are rigid in how they want their assignments prepared.						
I receive prompt responses from the instructor when I have questions.						
The instructor has provided specific instructions on when to expect responses to questions						
The instructor provides office hours for students to meet with him/her face-to-face						
Grades earned in online courses are similar to those of traditional courses.						
I am satisfied with the responses received from online instructors to questions I have about my courses						
Learning independently via online course work is better than learning in traditional classrooms						
Group work in online settings is more difficult to coordinate than in traditional classrooms.						
Some courses should not be offered online						
Interacting with classmates is difficult in online courses.						
Developing a cohort of classmates in the same program is important for social support.						
Developing a cohort of classmates in the same program is more difficult in online courses than in traditional programs						
Students in online courses do not have the same intellectual stimulation that occurs in a traditional classroom.						

Place a check mark in the column that most closely matches your agreement with each of the following statements:	NA	1	2	3	4	5
Discussions in unmoderated chat sessions are easy to follow.						
Discussions in moderated chat sessions are easy to follow						
Chat sessions can be frustrating when more than 5 participants are providing input.						
Students in online courses have similar preparation to complete more advanced coursework than students in traditional courses.						
Students are comfortable when switching between online and traditional courses.						
Online students have the same loyalty to their college as students who have completed their programs on campus.						
Online students are treated the same as students taking courses on campus						
Online students are as likely to join the alumni association as students who complete their programs on campus.						
Online students are as likely to participate in campus organizations and social groups as students who are taking traditional courses on campus						
I take online courses because time saved traveling to and from campus can be redirected to learning						
Online courses are more accessible than classroom courses						
Being able to complete courses from home or work without attending weekly classes is a major convenience						
Online courses provide the ability for students, instructors, and colleagues to communicate and collaborate from across campus or around the world						
Online course material is available to students anytime, anywhere						
Online courses facilitate my preference to work independently						
I learn best by reading or watching						
I am self motivated						
I learn best by listening						
I learn best by doing						

How would you rate your overall experience with online learning	❑ Excellent	❑ Good	❑ Average	❑ Fair	❑ Poor

Appendix B

Principal Components Analysis

Principal Components Analysis

Perceptions of On-line Learning

Items	Components							
	1	2	3	4	5	6	7	8
Positive perceptions of on-line learning	.820							
13. The instructions received in online courses are similar to those in traditional courses.	.815							
28. Learning independently via online course work is better than learning in traditional classrooms.	.808							
40. Online students have the same loyalty to their college as students who have completed their programs on campus.	.796 .790							
48. Online course material is available to students anytime, anywhere.	.788							
38. Students in online courses have similar preparation to complete more advanced coursework than students in traditional courses.	.786 .783							
47. Online courses provide the ability for students, instructors, and colleagues to communicate and collaborate from across campus or around the world.	.782 .780 .776							
46. Being able to complete courses from home or work without attending weekly classes is a major convenience.	.764 .756							
41. Online students are treated the same as students taking courses on campus.	.737							
26. Grades earned in online course are similar to those of traditional courses.	.708							
45. Online courses are more accessible than classroom classes.	.705							
39. Students are comfortable when switching between online and traditional courses.	.693 .674							
49. Online courses facilitate my preference to work independently.	.669							
12. There are no discernible differences in what I learned between online courses and traditional courses.	.665 .618							
27. I am satisfied with the responses received from online instructors to questions I have about my courses.	.551							
16. The online orientation provided the skills necessary to navigate efficiently through the course tool.	.535 .705							
42. Online students are as likely to join the alumni association as students who complete their programs on campus.	.693							
17. The course tool is intuitive and easy to use.	.674							
43. Online students are as likely to participate in campus organizations and social groups as students who are taking traditional courses on campus.	.669							
15. My technical skills are adequate for the online learning experience.	.665							
18. The course tool is available as needed.	.618							
9. Faculty consider different learning styles when teaching an online course.	.551							
44. I take online courses because time saved traveling to and from campus can be redirected to learning.	.535							
21. Chat rooms allow for discussion among students enrolled in the online course.								

Items	Components							
	1	2	3	4	5	6	7	8
Negative perceptions of on-line learning								
33. Developing a cohort of classmates in the same program is more difficult in online courses than in traditional programs.		.815						
31. Interacting with classmates is difficult in online courses.		.812						
34. Students in online course do not have the same intellectual stimulation that occurs in a traditional classroom.		.793						
30. Some courses should not be offered online.		.717						
29. Group work in online settings is more difficult ot coordinate than in traditional classrooms.		.642						
32. Developing a cohort of classmates in the same program is important for social support.		.584						
Satisfaction with Instructor								
23. I receive prompt responses from the instructor when I have questions.			.762					
20. The instructor returns assignments in a timely manner.			.707					
22. Instructors are rigid in how they want their assignments prepared.			.677					
24. The instructor has provided specific instructions on when to expect responses to questions.			.662					
19. The instructor provides assignments on a timely basis.			.571					
14. The quality of instruction is excellent.			.456					
25. The instructor provides office hours for students to meet with him/her face-to-face			.405					
Faculty Responsiveness								
5. Faculty are fair when grading assignments				.751				
10. Faculty are competent				.733				
8. Faculty provide timely feedback about my progress in the course				.715				
11. Faculty are available for consultation at reasonable times				.604				
6. I am able to register for my classes on-line\				.404				
Chat Sessions								
35. Discussions in unmoderated chat sessions are easy to follow					.829			
36. Discussions in moderated chat sessions are easy to follow					.829			
37. Chat sessions can be frustrating when more than 5 participants are providing input\					.656			
Learning Styles								
50. I learn best by reading or watching						.739		
51. I am self-motivated						.643		
53. I learn best by doing						.576		
52. I learn best by listening						.459		

Items	Components							
	1	2	3	4	5	6	7	8
Student Resources								
7. Tutoring services are available							.745	
4. Library staff are helpful							.650	
3. On-line library resources are available							.516	
Relationship with Instructor								
1. I have met my instructor in person								.804
2. My instructor cares about my success								.569

Appendix C

Information Letter

A COMPARISON OF STUDENT PERCEPTIONS REGARDING ONLINE COURSES
AND TRADITIONAL COURSES: A CASE STUDY

Principal Investigator: Werner D. Gottwald

INFORMATION LETTER

1.   **Introduction and Purpose**

The purpose of this study is to examine students' perceptions of their
participation in online courses in bachelor and masters degree programs at a
private business college to determine if relationships exist in their perceptions of
their preparedness for the online course delivery experience, the viability of
online courses compared with traditional classroom-based courses, and
academic outcomes. In addition, the study will attempt to identify the influence of
demographic variables, such as gender, age, socioeconomic level, and
employment status, on students' perceptions of preparedness and viability and
on their academic outcomes.

2.   **Procedure**

Participants will be asked to complete a questionnaire regarding their
experiences in online and traditional courses. The questionnaire also includes a
demographic section. The questionnaires should not require more than 10 to 15
minutes to complete.

3.   **Benefits**

There are no benefits to the participants.

4.   **Risks**

No risks or additional effects are likely to result from participation in this study. In
the unlikely event of an injury arising from participation in this study, no
reimbursement, compensation, or free medical treatment is offered by Wayne
State University or the researcher.

5.   **Voluntary Participation/Withdrawal**

Participation in this study is voluntary, with the return of the completed survey
evidence of your willingness to participate in the study. Once you have returned
your completed survey, you can withdraw until the end of the data collection
period. Following this period, your survey will not be identifiable, preventing your
withdrawal.

A COMPARISON OF STUDENT PERCEPTIONS REGARDING ONLINE COURSES
AND TRADITIONAL COURSES: A CASE STUDY

6. **Costs**

There are no costs involved in your participation in the study.

7. **Compensation**

There is no compensation being offered for participation in the study.

8. **Confidentiality**

All information collected during the course of this study will be kept confidential to
the extent permitted by law. No identifying information will be on the surveys after
they have been retrieved from e-mail. All information will be presented in
aggregate, with no individual participant identifiable in the study.

9. **Questions**

If you have any questions regarding the items on the survey or the purpose of the
study, please feel free to contact me at your earliest convenience. I can be
reached at (586) 255-3691. If you would like information regarding your rights
regarding participation in this study, please contact the chairperson of the Wayne
State University Behavioral Investigation Committee at (313) 577-1628.

10. **Consent to Participate in a Research Trial**

The return of your completed survey is evidence of your willingness to participate
in this study. Please retain this information sheet in case you have any questions
or would like additional information regarding this study.

Appendix D

Human Investigation Committee Approval

WAYNE STATE UNIVERSITY

HUMAN INVESTIGATION COMMITTEE
4201 St. Antoine Blvd., UHC 6-G
Detroit, Michigan 48201
Phone: (313) 577-1628
Fax: (313) 993-7122
HIC Website: www.hic.wayne.edu

NOTICE OF EXPEDITED APPROVAL

TO: Werner D. Gottwald
           (Education)
           21457 Bay Hills Dr.
           Macomb, MI 48044

FROM: Ellen Barton, Ph.D. _Ellen Barton_ EB
           Chair, Behavioral Institutional Review Board (B3)

DATE: November 19, 2004

RE: HIC#:   113904B3E   **Expiration Date:** November 18, 2005
           Study Title: A Comparison of Student Perceptions Regarding the Quality of Online Courses and Traditional
                           Courses
           Sponsor: No funding requested

The above-referenced Protocol and Information Sheet were **APPROVED** following Expedited Review (Category 7*) by the Chair for
the Wayne State University Institutional Review Board (B3) for the period of **November 19, 2004 through November 18, 2005.**

> **MARK YOUR CALENDAR**
> **Deadline for Re-Review: Monday, October 3, 2005**
> **To be reviewed and reported at the next convened B3 IRB meeting**

This approval does not replace any departmental or other approvals that may be required.

Federal regulations require that all research be reviewed at least annually. **It is the Principal Investigator's responsibility to
obtain review and continued approval before the expiration date.** You may **not** continue any research activity beyond the
expiration date without HIC approval.

- If you wish to have your protocol approved for continuation after the above approval period, please submit a
  completed Continuation Form at least six weeks before the expiration date. It may take up to six weeks from the time
  of submission to the time of approval to process your continuation request.
- **Failure to receive approval for continuation before the expiration date will result in the automatic suspension
  of the approval of this protocol on the expiration date. Information collected following suspension is
  unapproved research and can never be reported or published as research data.**
- If you do not wish continued approval, please submit a completed Closure Form when the study is terminated.
- All changes or amendments to your protocol or consent form require review and approval by the Human Investigation
  Committee (HIC) BEFORE implementation.
- You are also required to submit a written description of any adverse reactions or unexpected events on the
  appropriate form (Adverse Reaction and Unexpected Event Form) within the specified time frame.

*Based on the Expedited Review List, revised November, 1998
C: Dr. D. Marcotte, 0397 Education Bldg.

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ABSTRACT

A COMPARISON OF STUDENT PERCEPTIONS REGARDING ONLINE COURSES
AND TRADITIONAL COURSES: A CASE STUDY

by

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Distance learning for business has evolved to serve a population comprised largely of working adults. In the last decade, with the growth of Internet technology, graduate and undergraduate business students have gained unprecedented access to business curricula using various instructional delivery systems offered by educational institutions. Little well-designed research has been published that addresses student perceptions of the viability of online learning as compared with traditional classroom-based learning.

The purpose of this study was to examine students' perceptions of their participation in online courses in bachelor and masters of business administration programs at a private business college to determine if relationships exist in their perceptions of their preparedness for the online course delivery experience, the viability of online courses compared with traditional classroom-based courses, and their overall satisfaction levels with the online experience. In addition, the study examined the influence of demographic variables, such as gender, age, socioeconomic level, and employment status, on students' perceptions of preparedness and viability and on their overall satisfaction levels.

This study used an original survey to obtain perceptions of 441 students who were either enrolled in on-line courses (n=281) or traditional courses (n=160) at a private upper division and graduate business college. The results of this study indicated that students were generally positive about on-line courses, except for chat sessions. Older students had significantly higher scores for student resources and relationship with instructor than students who were under 30 years of age. Statistically significant differences were found between male and female students on positive perceptions of on-line learning, negative perceptions of on-line learning, and student resources. Students who were enrolled in on-line courses had significantly higher scores for positive perceptions of on-line learning, negative perceptions of on-line learning, satisfaction with mentor, chat sessions, and relationship with mentor.

Based on these findings, students enrolled in on-line courses appeared to be satisfied with their experiences. A limitation of the study was the use of a single college to obtain the sample. A recommendation for further research suggested that further analyses were needed between male and female students, as well as examining age differences.

Autobiographical Statement

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