

BECOMING ADULT LEARNERS: STUDENT
LEARNING IN A DUAL-CAMPUS
PHYSICAL THERAPY PROGRAM
USING DISTANCE EDUCATION

By

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CHAPTER 1

INTRODUCTION

Physical Therapy

Physical therapy education in the United States has its roots in the polio epidemic of 1916 and the Great War of 1917. Shortly after the United States declared war on Germany, the Surgeon General established the Division of Special Hospitals and Physical Reconstructionists (Murphy, 1995, p. 44). Thus, the U.S. Army began recruiting women to assist in the "reconstruction" of wounded soldiers. As a result, the first physical therapy program was established at Walter Reed General Hospital in Washington, D.C., to train these "reconstruction aides" (Reynolds, 1993, p. 55).

These aides were required to be unmarried women between the ages of 25 and 40 and were paid \$50 per month with the majority being trained as physical educators or nurses (Reynolds, 1993, pp. 47-49). The role these women provided highlighted the need for "reconstruction" of those with physical disabilities. Reconstruction or rehabilitation generally involved therapeutic gymnastics, hydrotherapy, massage, and electrical modalities. In 1918, the first group of physical therapy education programs was developed in order to train the hundreds of women required to meet the army's need for "reconstruction aides".

Since that time, the profession of physical therapy has grown to include over 58,000 practitioners, both men and women, in the United States. Physical therapists are licensed health professionals in each of the United States and its territories, with growing responsibilities in today's healthcare arena. The role of the physical therapist today greatly exceeds the role of the reconstruction aides of the early 1900's. In fact, physical therapy is an accepted and expected form of healthcare in the area of physical dysfunction. Today's model definition of physical therapy is lengthy; however, it allows one to understand the magnitude of the profession in today's society. The model definition is:

Physical therapy, which is the care and services provided by or under the direction and supervision of a physical therapist, includes: 1) examining and evaluating patients with health-related conditions, impairments, functional limitations, and disability in order to determine a diagnosis, prognosis, and intervention; 2) alleviating impairments and functional limitations by designing, implementing, and modifying therapeutic interventions; 3) preventing injury, impairments, functional limitations, and disability, including promoting and maintaining fitness, health, and quality of life in all age populations; and 4) engaging in consultation, education, and research. (www.apta.org/education/98EVCRTPT.HTML, 1998, p. 3)

With this amount of responsibility, the professional education of physical therapists must be rigorous and detailed in order to produce a competent individual with the ability to meet the professional responsibilities listed. There are currently 168 accredited programs that offer professional physical therapist education and 40 programs seeking accreditation in North America.

Physical Therapy Education

The American Women's Physical Therapeutic Association was formed in 1921. This organization allowed women with training equal to that of reconstruction aides to join the membership (Reynolds, 1993, p. 75). One year later, the group changed the association's name to the American Physiotherapy Association, and membership was limited to "graduates of recognized schools of physiotherapy" (p. 83). During that same year, the standardization of training for "physiotherapy aides" became an issue (p. 78). One physician noted in an article that "the rising demand for physiotherapists had brought many imposters into the field" (p. 79).

The American Physiotherapy Association established the Committee on Education and Publicity in 1926, which worked to establish standard requirements for schools offering physical therapy (Murphy, 1995, p. 83). In doing so, the

association hoped to insure that the profession would develop a reputation of providing a high quality product. By 1928, the process of formally accrediting physical therapist programs was completed with the help of the American Medical Association (Reynolds, 1993, p. 57). These requirements included graduation from a "recognized school of physical education or nursing" and a nine month specialized course "consisting of 33 hours of physical therapy-related instruction per week for a total of 1,200 hours" (Murphy, 1995, p. 83).

In 1940, there were 16 accredited programs in physical therapy. Of these programs, 3 offered baccalaureate degrees, and 13 offered post-baccalaureate certificates. The majority of these programs were offered in hospitals rather than in formal higher education settings (Reynolds, 1993). Over the years, the length of schooling required for physical therapy education has grown to a 2 to 3 year professional program beyond general education and science requirements. By 1977, the American Physical Therapy Association (APTA), formerly the American Physiotherapy Association, was recognized by the U.S. Department of Education and Council on Post-Secondary Education as the sole independent accrediting agency for physical therapy programs (Murphy, 1995).

Historically, accredited programs offered a variety of entry points into the profession including certificates and bachelor, master, and doctoral degrees. However, by January 1, 2002, a post-baccalaureate degree will be required for accreditation. The task of insuring that professional programs prepare competent individuals for licensure falls upon an accrediting agency (APTA, 1998).

The provision, requirements, and responsibilities of physical therapist education programs have been constantly evolving since the inception of the field's professional organization in 1921. According to the APTA (1997):

The mission of physical therapist professional education is to graduate knowledgeable, self-assured, adaptable, reflective, and service-oriented practitioners who, by virtue of critical thinking, lifelong learning, and ethical values, render independent judgements concerning patient or client needs; promote the health of the client; and enhance the professional, contextual, and collaborative foundations for practice. These practitioners contribute to society and the profession through practice, teaching, administration, and the discovery and application of new knowledge about physical therapy. (p. 3)

Currently, professional education programs for physical therapists are accredited under the authority of the Commission on Accreditation in Physical Therapy Education (CAPTE), which is a branch of the APTA. The

function of the CAPTE is to insure that programs of study meet certain predetermined standards.

Accreditation involves a continuing process designed to help an institution or program analyze its functions and mission, assess its performances, review its planning procedures and identify ways to increase its educational effectiveness. Essentially, accreditation serves to protect the welfare and safety of the public. (APTA, 1996, p. 2)

The purpose of accreditation is to assist and guide educational institutions to insure the continued development of quality educational programs. With this in mind, the CAPTE includes self-study for an educational program as a component of the accreditation program. This self-study report:

Should be clear and concise and should be written in such a way as to help those who are unfamiliar with the program to accomplish the following:

- Develop an understanding of the environment in which the physical therapy program operates and the nature of the learning experiences provided, and
 - Gain the information needed in order that the accrediting agency can evaluate the physical therapy education program fairly in relation to the objectives stated for it and the current evaluative criteria.
- (APTA, 1996, p. 8)

This self-study process is conducted on a frequent basis. Formal written reports are submitted to the CAPTE as a process of accreditation. Thus, due to the accreditation requirements of CAPTE, universities seeking accreditation

must prepare for and comply with specific guidelines in order to become accredited.

The University of Oklahoma Health Science Center

The University of Oklahoma Health Sciences Center (OUHSC) is a branch institution within the University of Oklahoma system. The OUHSC houses the colleges of allied health, dentistry, medicine, pharmacy, and public health. The College of Allied Health has five departments: Communication Sciences and Disorders, Nutrition, Occupational Therapy, Physical Therapy, and Radiologic Technology.

The Department of Physical Therapy has been providing professional physical therapy education since 1955, and the department has grown to meet the needs of the university, community, and profession during the past 44 years. Historically, the program has been located on the Oklahoma City campus and offered a Bachelor of Science degree. However, in the fall of 1999 that historic pathway was changed (Division of Rehabilitation Sciences, 1999, p. 8).

Although this degree has the academic designation of Bachelor of Science, it is a professional degree. The professional degree is distinguished as such in that it identifies individuals who have completed a professional program. Examples of a professional degree include Doctor

of Medicine, Doctor of Osteopathy, Doctor of Optometry, and Juris Doctorate. In those cases a name different from ones used in mainstream academic fields has been chosen. In physical therapy, the degree title has been left to the university and its board of regents rather than the professional association. The Commission on Accreditation in Physical Therapy Education set forth a mandate in 1998 stating that by the year 2002, all professional programs of physical therapy will be offered at the post-baccalaureate level. In order to meet the mandate set forth by CAPTE, the department set in motion a plan to transition from the Bachelor of Science professional degree to a Master of Physical Therapy (MPT) degree. These students are not admitted to the Graduate College since the degree is a professional degree rather than a standard academic one. The first class of students in the MPT program began in the fall of 1999.

Also, the College of Allied Health received a mandate in 1998 from the president of the university to expand the physical therapy and occupational therapy programs to Tulsa, Oklahoma. The programs would continue but with dual-campus. In order to have one program and two campuses, the college required technology that bridged the 110-mile distance between Oklahoma City and Tulsa. It also

had to investigate how that technology would affect the teaching-learning transaction and what support systems would have to be in place to insure quality instruction. This is the seventh professional physical therapy program in the nation to expand using interactive videoconferencing technology (Mary Jane Harris, CAPTE, personal communication, October 12, 1999).

The University of Oklahoma Health Science Center has a branch campus located in Tulsa. This branch was identified as the location to which the programs would expand. This program and the occupational therapy program are the first on the Tulsa campus to offer actual classroom work for students of the OUHSC. The classrooms, laboratories, computer lab, resource room, and offices are located in a building that houses the OUHSC-Tulsa campus library. Members of the college administration including the associate dean and the division chair developed the technological component plan. Both of those individuals are allied health professionals with some experience in distance education and the technology being used.

The physical therapy class was divided into two groups. The Oklahoma City group, located on the main campus, has 30 students. The Tulsa group consists of 17 students. Five physical therapists, four occupational

therapists, and two basic scientists participated in the didactic education component during the first year of the physical therapy program. Nine of the faculty members are housed on the Oklahoma City campus, and two are on the Tulsa campus. A plan to add one more full-time physical therapy faculty member to the Tulsa campus by August 2000 is in place.

The physical therapy curriculum includes 90 semester hours of prerequisite course work. Thirty-seven of those hours are in natural sciences. Once admitted to the professional program, the students are required to complete 80 credit hours during the 8 semesters in a 3-year period.

As part of the accreditation process, the university was required to submit its philosophy of education to CAPTE. The philosophy below describes the department's position:

We believe that student achievement is influenced by underlying personal resources that affect learning, adaptation, and skilled performance. The physical, social, and cultural environments in which students learn also influence their professional development both explicitly and implicitly. (Division of Rehabilitation Sciences, 1999, p. 10)

Distance Education

Distance education is not a new concept in the United States, but some of the media used to disseminate that

information is. Distance education is a form of teaching and learning in which the facilitator and students are in differing geographic locations. The primary purpose of this form of education is to help individuals gain new knowledge and skills (Moore, 1987, p. 2).

The oldest form of distance education in the United States is correspondence instruction (Moore, 1987, p. 3). For over 100 years, people have been using this form of media to gain knowledge and skills that pertain to their lives (Knowles, 1977, p. 39). During the past century technological advances have made a number of other media forms available including radio, television, audio and video recordings, computers, and integrated systems that include multiple forms (Moore, 1987, p. 3).

Although the definition of distance education has evolved over the years, the premise upon which it is based is fundamentally unchanged.

Distance education is all arrangements for providing instruction through print or electronic communications media to persons engaged in planned learning in a place or time different from that of the instructor or instructors. (Moore, 1990, p. xv)

Today, integrative forms of media such as videoconferencing allow for synchronous learning from more than one site. "In the United States the term 'distance

learning' has come to be used as a global term for the use of electronic technologies in distance education" (Keegan, 1996, p. 37). Distance education is made up of two equal components: distance learning and distance teaching.

The technologic age has allowed the classroom to be truly "without walls". That is, individuals can engage in formal and informal learning through a variety of media in virtually any geographic location. Some media allow for real-time or synchronous interaction while others allow only asynchronous learning opportunities. The personal computer has allowed people to participate in on-line courses and audio-video conferencing and to have a virtual library of information at their fingertips. However, the most recent technology that allows for real-time interactivity holds much promise for the future of education. Interactivity is one way to characterize distance technologies that allows for real-time exchanges of information in a variety of forms (Wagner, 1997, p. 19).

One concern about using distance education in formal professional programs is the fact that the situation is unfamiliar to most learners and teachers. This lack of familiarity with the teaching-learning situation from a secondary site may be in conflict with that with which

facilitators and students are comfortable (Keegan, 1996). "To design effective distance education programs, it is important to understand how learning occurs and the factors that influence the learning process" (Gibson, 1998, p. 77). Therefore, it is imperative that the teacher and the learner understand not only how the educational "situation" is affected but also what effect this has on the teaching-learning transaction.

Adult Education

The term adult education refers to "the teaching of adults according to any organized formal or informal plan of education" (Verduin & Clark, 1991, p. 5). Physical therapy education is only one type of teaching and learning that is included into the category of adult education. The term "adult education" is used to describe the processes of adult learning and teaching adults in both formal and informal settings. There are a number of models and theories related to adult education and most take both teaching and learning into account (Merriam & Caffarella, 1999).

"The term 'adult education' is used to convey three meanings" (Knowles, 1977, p. viii). These three areas include process, organized activities, and movement or field. Process describes how adults go about participating

in educational activities. Organizational activities allow adults to participate in formal educational programs in order to meet specific educational objectives. The terms movement or field describe "adult education bringing together into a definable social system all the individuals, institutions, and associations concerned with the education of adults" (p. viii).

In the late 1960's, Malcolm Knowles defined adult learning in a way that separated that process from the pedagogical models for children that preceded it. The term andragogy, "the art and science of helping adults learn" (Knowles, 1980, p. 43), was based on five assumptions or principles he believed contributed to the process of adult learning. As a result of these principles, adult learners look for specific things when assessing programs of learning such as access, ease of scheduling, decreased travel time, and a relaxed physical setting.

Many adults have participated in educational programs that rely on teachers to direct the learning. Adult learning is based on the concept that participation and experience lead to self-directed learning. The andragogical model assumes that adult learners are self-directed. In his assessment of Houle's fundamental system of educational design, Knowles (1990) explains how some

adults experience "culture shock" when engaged in an adult education program that requires self-directed versus teacher-directed learning. Students educated in a traditional university setting generally experienced teacher-directed learning. Universities using distance technology need to realize that adults are more independent than children, but these adults still need time to acclimate themselves to a new environment. This is especially true for students at a distant site because those students are generally required to be more self-directed than students at a traditional site (Hardy & Boaz, 1997, p. 42). So, although Knowles definition of andragogy and the five assumptions that support it may appear to be contradicted by his later assessment of Houle's work, it appears that he did realize that the transition from pedagogy to andragogy was not seamless.

Problem Statement

In the United States today there is a distinct standard for physical therapy education that insures adequate preparation of students planning to enter the healthcare arena. The mandate from CAPTE to change curricula from a baccalaureate degree to a post-baccalaureate degree and the mandate from the president of the University of Oklahoma to expand the physical therapy

program to Tulsa have resulted in historic changes in physical therapy education in Oklahoma.

This change includes distance education. However, it is not known how distance education will affect the learning of professional physical therapy students at a distant site. These learners are "non-traditional" in the sense that they come from a traditional classroom learning background but now are required to learn in a situation using distance education that is foreign to them.

While there are studies related to outcomes of students from distance sites in a variety of course topics, only one is directly related to the development of a professional physical therapy program at a distant site (English, Harrison, & Hart, 1998). Physical therapy has traditionally been a program in which students are engaged in learning through on-site instruction with faculty and peers. In the situation in the new program at the University of Oklahoma, approximately one-third of the students are located at a distant site and receive approximately 90% of their didactic instruction from a remote site. While the resources available are not equal, the resources available are expected to be equitable. The problem in this study is that it is not known how students learn in this type of situation.

Purpose

The purpose of this study was to describe the process of student learning at a distant site in a dual-campus professional physical therapy program using distance education. This was accomplished in two ways. First, the development of University of Oklahoma Health Sciences Center's professional physical therapy program's "distant site" and the effect that implementation of distance education has on student outcomes and attitudes at this site was described. Second, the study investigated how differences in personality type, learning preferences, and perceptions affected those outcomes and attitudes. A variety of methods were used. First, students' attitudes toward televised courses in this learning situation were assessed using a tool developed by Paul Biner (1993) that was modified to meet the needs of this study. Second, an assessment of students' tendencies to be extroverted or introverted as determined by the Myers-Briggs Type Indicator (MBTI) was compared to students' attitudes, outcomes, and preferences. Third, the effect of learning preferences was determined by the Assessing The Learning Strategies of Adults (ATLAS) instrument (Conti & Kolody, 1999) and related to students' outcomes and attitudes. Fourth, student perceptions and actions were gathered using

a variety of techniques including observation, interviews, and focus groups. Fifth, students' outcomes as determined by grades were measured.

Research Questions

This study investigated the learning process of students at the distant site of the OUHSC physical therapy program during its first two semesters and described the forces that affected the process. Specifically, the study described the learning preferences and attitudes of the students at the distant site and how these factors affected learning outcomes and attitudes. Eight research questions were addressed in this study:

1. What are the demographic characteristics of the students in the program?
2. What behaviors of students and faculty can be observed that facilitate or hinder the learning process?
3. What is the profile of the students at the distant site in relationship to their personality type as measured by the extrovert/introvert component of the MBTI?
4. What perceived differences exist in the approach to learning of students identified as being introverted and extroverted?
5. What is the profile of the students at the distant site in relationship to their learning strategies as measured by ATLAS?

6. What differences exist between learning strategy groups in their expressed approaches to learning?
7. What are the distant site students' attitudes toward instructor characteristics, technological characteristics, and course management and coordination?
8. How do students' outcomes as determined by grades differ between the main campus and the distant site?

In order to describe student learning at the distant site of the program at the University of Oklahoma, multiple sources were used. Using triangulation of multiple data allowed for a richer, more accurate account of what actually occurred during the first two semesters of the program. Rather than being an outside researcher, I was a part of the program and its development. Being in this position allowed me to observe things that occurred formally, informally, socially, and academically. This is where the distinction between educational research and quantitative research will be made.

The methods used to gather data in this case study include: (a) observation in order to allow for the incorporation of formal and informal observations as well as social and academic ones, (b) survey methods to determine (1) student attitudes as determined by a questionnaire, (2) learning preferences as determined by

ATLAS, (3) personality type as determined by the MBTI, (c) focus groups in order to gain insight into the quantitative data and gather qualitative data to give greater description and meaning to the problem, (d) interviews in order to gain insight into the students perceptions of the learning process and to confirm focus group data, and (e) outcomes as determined by grades.

Definition of Terms

Andragogy: The art and science of facilitating adult learning (Knowles, 1980).

Adult Education: "Natural, unplanned learning and deliberate, sustained efforts to acquire new knowledge" (Davis, 2000, p. 30).

Adult Learning: Learning that results "from a transaction among adults in which experiences are interpreted, skills, and knowledge acquired, and actions taken" (Brookfield, 1986, p. 4).

Empowerment: Students investing themselves with power in order to insure that needs are met.

Engager: One of three categories of learning strategies based on the Assessing The Learning Strategies of Adults instrument. These students are "passionate learners who love to learn, learn with feeling, and

learn best when actively engaged in a meaningful manner" (Conti & Kolody, 1999, p.14).

Extrovert: A psychological attitude in which the individual "directs energy mainly toward the outer world of people and objects" (Myers, et al., 1998, p. 6).

Introvert: A psychological attitude in which the individual "directs energy mainly toward the inner world experiences and ideas" (Myers, et al., 1998, p. 6).

Navigator: One of three categories of learning strategies based on the Assessing The Learning Strategies of Adults instrument. These students are "focused learners who chart a course for learning and follow it" (Conti & Kolody, 1999, p. 9).

Physical Therapist: An allied health professional who is licensed by the state in which he practices and is responsible for the evaluation, diagnosis, and treatment of functional impairments.

Problem Solvers: One of three categories of learning strategies based on the Assessing The Learning Strategies of Adults instrument. These students "test assumptions to evaluate the specifics and generalizability within a learning situation; and they generate alternatives to create additional learning options" (Conti & Kolody, 1999, p. 12).

Self-Directed Learning: The process of self-diagnosing needs, establishing goals, identifying resources for learning, implementing learning strategies, and evaluating the results (Candy, 1991).

Transformative Learning: A form of learning that occurs as a result of challenges to ones current perceptions about the world in which he lives (Mezirow, 1991).

Chapter II

REVIEW OF THE LITERATURE

Introduction

The role of education in the profession of physical therapy is an evolving role and has been so throughout history (Murphy, 1995). The changes in societal expectations of health care providers mandate that schools providing professional physical therapy education produce competent clinicians who are able to serve as primary caregivers in today's health care arena. In doing so, these schools must be familiar with the needs of the profession, community, and stakeholders. The University of Oklahoma realized that the profession, university, community, and stakeholders would benefit from locating a branch campus of their professional physical therapy program in Tulsa (M. Ferretti, Physical Therapy Program Director, personal communication, August 30, 1999). By expanding to Tulsa, the OUHSC became the sixth professional physical therapy program in the United States to use distance technology to provide the majority of its program offerings. Other schools using distance technology to provide education to more than one campus include: Medical College of Georgia, Texas Tech University, University of Kansas, University of Kentucky, and the University of South

Carolina (Mary Jane Harris, CAPTE, personal communication, October 12, 1999).

The professional accreditation agency, CAPTE, through its constituents, realizes that professional physical therapy education must meet those same needs (APTA, 1998).

Deusinger (1999) describes four transitions that occur during a physical therapy students' education.

1. admission into the professional program;
2. matriculation in didactic education;
3. participation in clinical education;
4. entry into the world of employment. (p. 2)

The first two semesters of OUHSC physical therapy program are didactic in nature but students are introduced to the clinical environment. During this period of time students will be led to "new beliefs, new ideas, and new skills" (p. 2). This part of the process prepares students to enter the clinic during clinical education to practice their newly found knowledge in a real world experience.

Much of the literature pertaining to physical therapy education focuses on student learners (Balogun, Pellegrini, Miller, & Katz, 1999; Williams & Wilkins, 1999), teaching methods (Bello-Haas, Bazyk, Ekelman, & Milidonis, 1999), modes of teaching (Berube, Murray, & Schultze, 1999; Boucher, Hunter, & Henry, 1999; Lake, 1999; and McGinty, 2000), and program assessment (Boucher, 1999). Each of

these have some foundation in pedagogical and andragogical principles that are applicable to a variety of learning situations.

Adult Education

The field of adult education has its foundation in works of several educators since the beginning of the 20th century. Many of these educators developed principles, models, and theories about how the process of adult education occurred and helped describe what position the "field" should hold in the education of society. This foundation is supported by concepts developed by practitioners in the field and tested by adult educators for their value and merit. While each of these contributions had a different effect on the field, each facilitated the emerging identity of the field. A few of these contributions have had a dramatic effect on the position of the field of adult education including andragogy, program planning, self-directed learning, transformative learning, and empowerment. Adult education principles are applicable to professional physical therapy programs in that the students of those programs are adults who are required to be lifelong learners.

Concept of Andragogy

In the 1960's the field of adult education was attempting to define itself. A focus was placed on the status of the field in the professional community. Was the field of adult education in fact a profession, or was it a subset of some established profession? Malcolm Knowles started developing a model of adult education in the 1960's in response to the needs of the field of adult education at the time (Knowles, 1990). The term he used to identify his model of adult education was andragogy.

Andragogy is defined as the "the art and science of teaching adults" (Knowles, 1980, p. 40). Knowles was introduced to the term in 1967 by a Yugoslavian adult educator and used the term in his article "Androgogy, Not Pedagogy" which was published in 1968 (Knowles, 1990, p. 51). Although the term andragogy had been used in Europe over 100 years earlier, the term was not well known in the United States. Knowles points out that the term was so new to him that he misspelled it in that first article (Knowles, 1990, p. 51). In the 1968 article, Knowles contrasts the concepts of andragogy to pedagogy. Pedagogy is defined as "the science and art of how children learn" (Knowles, 1980, p. 40).

Initially the models of pedagogy and andragogy were strictly contrasted to describe assumptions that directed the teaching of children versus adults. However, Knowles and others later acknowledged that the art and science of teaching could be viewed as a continuum. Some individuals could be at a point where they rely on teacher-directed learning to some degree but could begin to appreciate and benefit from a student-centered approach (Knowles, 1990).

Major Assumptions of Andragogy

In 1970 Knowles published the four assumptions that he believed differentiated adult education from the education of children:

1. As a person matures, his or her self-concept moves from that of a dependent personality toward one of a self-directed human being.
2. An adult accumulates a growing reservoir of experiences, which is a rich resource for learning.
3. The readiness of an adult to learn is closely related to the developmental tasks of his or her social role.
4. There is a change in time perspective as people mature--from future application of knowledge to immediacy of application. Thus, an adult is more problem centered than subject centered. (Knowles, 1980, pp. 44-45)

Prior to Knowles publication of this list in 1970, a number of individuals identified assumptions or components that

are similar to the ones he listed although they did not combine them into a comprehensive model for adult learning.

One approach to adult learning was that "the beginning of instruction shall be made with the experience learners already have; that this experience and the capacities that have been developed during its course provide the starting point for all other learning" (Dewey, 1995, p. 27).

Lindeman (1995) described four assumptions that he believed highlighted his view of adult education. Two of these assumptions are similar to Knowles' andragogy.

1. Its purpose is to put meaning into the whole of life.
2. The learner's experiences should be the resource for learning. (p. 31)

It is clear that others shared some of Knowles assumptions of andragogy. However, Knowles presented a format that appeared to meet the needs of the profession.

After a number of experiences using his model of adult education and discussing its use in practice with others, Knowles added a fifth assumption to his model in 1984. This assumption stated that "adults are motivated to learn by internal factors rather than external ones" (Knowles, 1984, p. 9). By adding this to the list of andragogical assumptions, Knowles demonstrated his ability to evaluate his model and modify it based on its use in practice. It

also demonstrates his dedication to the development of the concept of andragogy.

As recently as 1990, Knowles continued to re-assess and modify his model based on his observations and the observations of others (Knowles, 1990, pp. 57-63). A sixth assumption was added to Knowles' list based on the work of Tough. In it he identified that "adults need to know why they need to learn something before undertaking to learn it" (Knowles, 1990, p. 57).

Program Planning Model

In Knowles (1980) text *The Modern Practice of Adult Education* he devotes a chapter to the design and management of learning activities (pp. 222-249). In this chapter, he discusses the process for designing and operating learning activities that result from the principles of andragogy. He proposes that "the same basic process should be applied to all types of learning activities--'learning activities' defined as separate units or sequences of the various formats of learning" (Knowles, 1980, p. 222). The phases of the designing and operating process include:

1. Setting a climate for learning.
2. Establishing a structure for mutual planning.
3. Diagnosing needs for learning.
4. Formulating directions (objectives) for learning.

5. Designing a pattern of learning experiences.
6. Managing the execution of the learning experiences.
7. Evaluating results and re-diagnosing learning needs. (Knowles, 1980, pp. 222-223)

The first phase of the process addresses setting a climate for learning long before the program begins. Realizing that the learning environment can be facilitatory or inhibitory, one must look at the physical and psychological factors that affect learning. Aspects of the physical environment to be addressed include lighting, available space, temperature, arrangement of tables and chairs, equipment placement, and noise level. Psychosocial components to be considered include issues related to the affective domain of learning. Are the relationships in the learning environment respectful, supportive, and caring? Is the learning effort collaborative rather than competitive? Is the responsibility of learning shared by all rather than shared by a few? Is an emphasis placed on learning rather than teaching? If the educator can answer "yes" to each of these questions, a psychosocial environment appropriate for learning activities has been established (Knowles, 1980, p. 223).

Establishing a structure for mutual planning is the second phase of the process. This phase allows for

collaboration in the development of a learning activity. Ideally this would occur before the program begins, but in situations where programming is planned before the participants arrive, special planning should occur. Knowles recommends that a planning committee be established and that it be representative of the participant population, if possible (Knowles, 1980, p. 226).

Diagnosis of learning needs is the third step in the process. This step includes identification of students needs based on self-diagnosis, if possible, in order to achieve a high level of motivation. Self-diagnosis of needs is made by the participant through research, expert opinion, task analysis, and group participation (Knowles, 1980, p. 227).

The fourth phase of designing and managing learning activities identifies objectives for learning. Objectives are stated best when they "identify both the kind of behavior to be developed...and the content in which this behavior is to operate" (Knowles, 1980, p. 233). These objectives allow for improved program planning and for performance evaluation. Identifying goals helps establish the course of action that will most likely result in a successful program outcome.

Designing a pattern of learning experiences is the fifth phase in the process. The process of organizing a curriculum in order to fulfill stated objectives is based on specific organizing principles. These principles include the concepts of proceeding from the simple to complex, awareness of prerequisite requirements, proceeding from the whole to the part, and following a chronological order (Knowles, 1980, p. 235). Other criteria to be considered when organizing learning experiences include the concepts of continuity, sequence, and integration (Knowles, 1980, p. 235).

The sixth phase of the process has a focus on managing learning experiences. This phase addresses the use of techniques in order to make the learning experience most meaningful to the learner. The job of the facilitator is to choose the techniques that will most effectively aid the learner in reaching the stated objectives. These techniques may include styles of presentation, forms of learner participation, discussion, simulation, and skill-practice exercises (Knowles, 1980, p. 239).

The final phase includes evaluating results and re-diagnosing learning needs. This phase encourages the identification of "gaps" in learning and a measurement of

the learning that actually occurred in the program
(Knowles, 1980, p. 247).

Self-directed learning

The term "self-directed learning" can be found throughout the adult education literature since the 1980's. However, the meaning of the term is not consistent in the literature (Candy, 1991; Merriam & Caffarella, 1999, p. 293). The common definitions depict self-directed learning as a goal, a process, or an attribute of the learner (Brookfield, 1986; Candy, 1991; Knowles, 1980; Merriam & Caffarella, 1999; Tough, 1979, 1982). Thus, there are a variety of ways to interpret self-directed learning and its function in adult education. Self-directed learning as a process of education is when "people take the primary initiative for planning, carrying out, and evaluating their own learning experiences" (Merriam & Caffarella, 1999, p. 293). This process describes the concept of learners engaging in study either individually or in a group with or without support in formal or informal settings. Tough (1982) and Candy (1991) address the widely held belief that self-directed learning occurs in isolation. Tough (1982) hypothesizes that "there is more interaction with more people around the content and the process in self-planned

learning than is in the traditional classroom or course" (p. 69).

When self-directed learning is viewed as a goal of education, then the focus is on aiding the learner to become more self-directed in order to enhance the likelihood that lifelong learning will occur. Lifelong learning is a concept that was used as early as 1929 to describe adults learning throughout their life span to meet their specific needs (Candy, 1991). "Schooling must be concerned primarily with developing the skills of inquiry, and adult education must be primarily concerned with providing the resources and support for self-directed inquirers" (Knowles, 1980, p. 19). Self-direction as an attribute of learners is based on the assumption that "learning in adulthood means becoming more self-directed and autonomous" (Knowles, 1980, p. 19).

Bognall (1987) goes one step further to distinguish the differences between self-directed learning as a process and a goal of education. He views the process of self-directed learning as "self-management" while the goal is considered "self-determination" (p. 91). Candy (1991) uses the term "personal autonomy" to describe Bognall's concept of self-management. "This means that a person who is autonomous would be both willing and able to exert a degree

of control over concepts of his/her learning situation" (pp. 20-21).

While many view self-directed learning as a behavior, Brookfield (1986) places an emphasis on the cognitive component of self-directedness in learning. He uses the terms "field dependence and independence" to examine the cognitive aspect of this type of learning (p. 41). Field-dependent learners are described as "extrinsically oriented, responsive to external reinforcement, aware of context, view things holistically, and are cognizant of the effects that their learning has on others" (Brookfield, 1986, p. 41). Field-independent learners are described as "analytical, socially independent, inner-directed, individualistic, and possessed of a strong sense of self-identity" (Brookfield, 1986, p. 41). He reports that field dependent learners may have more difficulty being self-directed than their counterparts because they rely more on structure and guidance from an instructor.

Merriam and Caffarella (1999) identified three models that "represent a mixture of conceptual, empirical, and experientially derived views of the process of self-directed learning" (p. 293). Linear models are those in which learners follow a series of steps or actions to attain their goals. For example, Tough (1979) presents a

list of "preparatory steps" used by learners engaging in self-planned learning that represent "several levels of comprehensiveness" (p. 95). Interactive models of self-directed learning have "an emphasis on two or more factors, such as opportunities people find in their own environments, the personality characteristics of learners, cognitive processes, and the context of learning, which collectively interact to form episodes of self-directed learning" (Merriam & Caffarella, 1999, p. 295). The third category is composed of instructional models. These models "represent frameworks that instructors in formal settings could use to integrate self-directed methods of learning into their programs and activities" (p. 302).

Tough (1979) places an emphasis on the "planner" in self-planned learning. The planner of a self-planned learning activity can be the learner, a curriculum, a teacher, or a peer group. The planner in the process is the one that "does most of the detailed day-to-day planning in the learning project" (p. 77). The learner is still in control of the learning, but the planner aides in establishing a course of action that will assist the learner in meeting identified goals.

The amount of control a learner has or chooses to give away is situation specific. In higher education, the

instructor traditionally has had a high degree of control (Tough, 1982), but a shift in control to that of a more shared responsibility is becoming more common. Examples of how this has worked in higher education include the use of learning contracts (Knowles, 1980), competency based programs, and problem-based learning programs (Tough, 1982).

The distance education literature supports the concept of self-directed learning as an attribute of the learner. "It is almost a requirement that distance students be more focused, better time managers, and able to work both independently and in groups" (Hardy & Boaz, 1997, p. 42). The nature of the physical therapy profession requires that self-direction be a goal of students in the field. "The profession needs to heighten student awareness, responsibility, and ownership for learning" (APTA, 1997, p. 233). Each of the three models presented by Merriam and Caffarella (1999) are applicable to the learning situation in the professional physical therapy program at the University of Oklahoma. A linear model of self-directed learning can be seen as a part of the curriculum. As the learners develop what they consider to be an adequate foundation of knowledge related to a specific task, they are then ready to pursue higher level tasks. An

interactive model of self-directed learning can be seen in the clinical or laboratory setting. In this situation, learners have the opportunity to use their knowledge and apply it to a practical problem in order to bring about a higher level of understanding. This opportunity can bring clarity to the problem. The institutional model is used regularly. This type of model allows for more student control by allowing the student to guide the learning experience to achieve a stated goal. This could pertain to a course or to the whole curriculum. Each of these situations may rely on different planners in the self-directed learning activity and each would allow for varying degrees of learner control.

Transformative Learning

Transformational or transformative learning is a theory about change that was introduced to the adult education community by Jack Mezirow in 1978 (Merriam & Caffarella, 1999, p. 318). Where andragogy and self-directed learning tend to focus on the learner, "transformational learning centers more on the cognitive process of learning" (p. 318). While Mezirow is often thought of as the originator of this learning concept, other adult educators have considered the transformative process in learning. Both Myles Horton and Paulo Freire

understood the value of this process as it related to social and personal change.

Specific to Mezirow's concept of transformative learning is the action of adult's making meaning of a specific topic. He describes two concepts that address the relationship between meaning and learning; these are meaning schemes and meaning perspectives. Meaning schemes are "specific beliefs, feelings, attitudes, and value judgements," and meaning perspectives are "broad, generalized orienting predispositions" (Mezirow, 1991, p. 44). Learning occurs in one of these two contexts. Individual's either change their belief, attitude, feeling, or value judgement about a topic, or they change their whole perspective about the topic.

Mezirow believes that people are freed when a change in their perspective occurs. The previously held beliefs, attitudes, and value judgements that dictated their understanding of a topic have been challenged. This causes the individual to critically reflect on the situation. If the problem solving techniques the individual has relied on in the past fail to work, a change in the individuals perspective will take place. Perspective transformation is defined as:

The process of becoming critically aware of how and why our presuppositions have come to constrain the way we perceive, understand, and feel about our world; changing these structures of habitual expectation to make possible a more inclusive, discriminating, and integrative perspective; and, finally, making choices or otherwise acting upon these new understandings. (Mezirow, 1991, p. 167)

Mezirow (1991) believes that a distorting dilemma is often the reason that transformative learning takes place. This distorting dilemma can be anything that challenges our preconceived ideas about a topic. Learning leads to change through a process of "developing and refining our meaning schemes and perspectives so that we may use them more effectively to differentiate and integrate experience (Mezirow, 1991, p. 146).

Empowerment

To empower is defined as "to invest with power" (American Heritage College Dictionary, 1993, p. 451). Both Myles Horton and Paulo Freire invested learners with power through education. They realized that social, political, and economic factors many times dictate to the lives of individuals who lacked the skills to effectively respond. In both of these educators' experiences, they identified knowledge as the deficit.

Whether working with individuals plagued by illiteracy or disenfranchised coal miners, Freire and Horton realized that education is a powerful force. In each of these cases, educating the working people about their world and ways of addressing disparity through education led to social change. Empowering individuals to take action through education is considered by many to be a part of the radical philosophy of education (Elias & Merriam, 1995). "The theory is radical in the political sense of utilizing education to bring about social, political, and economic changes in society" (p. 139). Horton's creation of the Highlander Folk School in the 1930's became famous for its approach to educating the people by bringing about "radical" change. Freire is most famous for the literacy program he established in Brazil. Horton and Freire encouraged the people to identify their own needs, and then they established an educational plan to help them meet their needs. Horton was "convinced that the people, no matter how poor or untutored would know what they needed to learn, if he could only learn to listen to them and to translate what he heard into an educational program" (Adams, 1975, p. 24).

Both Horton and Freire developed their ideas on learning by their experiences educating various groups of

people, and each experience helped them develop as educators. "We make ourselves educators, we develop ourselves as educators permanently, in the practice and through reflecting upon the practice" (Freire, 1998, p. 232). This educational process of bringing about social and political change works because it empowers the people through a transformative process that changes the way they view themselves and the world in which they live. As long as the people realize what their needs are, an educational plan can be established to help them address that need. It is imperative that the learners be active participants during this process so that they realize the discrepancy between their role in society and society's view of them.

The role of transformative learning and empowerment are learning principles that relate to adult learning in all of its forms. Students at the distance site in professional programs may be affected by these principles because of their lack of familiarity in this environment and the social and political factors affecting their learning.

Distance Education

Although the concept of distance education is not new, the ways in which that education is being provided may be. "Live video instruction is the fastest growing distance

learning delivery mode in the United States today" (Ostendorf, 1997, p. 51). Not only have technologic advances changed the face of distance education, but they have also altered the format of education at the university level. Now more than ever, universities are re-evaluating and re-thinking their mission to insure that they are meeting the needs of the learner and society (Connick, 1997).

Much of the literature addressing distance education is specific to certain methods used to facilitate learning. Research may pertain to a specific mode or a variety of modes of instruction. The first public offering of distance education is unknown, but an advertisement for "shorthand lessons by mail" was published in the early 1700's (Verduin and Clark, 1991, p. 15). Since that time a number of offerings have been available through distance education. In 1878, the Illinois Wesleyan University began offering distance study and in 1878 Chautauqua was founded (Verduin & Clark, 1991). John Vincent and others developed Chautauqua with a goal of "expanding access to education to all Americans" through reading (Verduin and Clark, 1991, p. 16). "Chautauqua was the first significant distance education effort in America" (Moore, 1989, p. 223).

As time and technology progressed, so did the modes of providing distance education. Print forms of distance education were supplemented by radio broadcasts in the 1920's, and these were soon followed by television in the 1940's. Forms of interactive media were developed as technology improved so that two-way communication could be made possible. One example of this is when a student could watch an educational program on television and telephone comments or questions to the presenters. As broadcast technology improved, modes such as cable television, microwave transmissions, and satellite broadcasts became possible. Also, recordings by audio tape, video recordings, and interactive video disc became prominent. During the 1980's and 1990's two-way transmission through closed-circuit methods became popular in that visual and audio signals could be transmitted simultaneously. In the 1990's computer instruction gained popularity as the number of Americans with personal computers increased. The technology for improved videoconferencing was not far behind.

Interactive videoconferencing can occur in a variety of forms including computer, satellite, and fiber optic transmission. Real-time interactive videoconferencing provides two-way audio and video communication between the

teacher and the student without a noticeable delay in transmission.

In research related to distance education, it is important to know the method in which information was received. For example, findings from a study that addressed learning and learners using audio conferencing may not be generalizable to students using interactive video-conferencing as a primary mode of instruction because the learning situations are not equal. Major findings related to learning in distance education have tended to focus on "the effects and/or effectiveness of one or more methods" (Cookson, 1989, p. 23).

While many studies have looked at student learning based on the outcomes and attitudes of learners in a distance education setting compared to learners in a traditional setting, some studies have focused on specific characteristics of distance learners. These characteristics include learning strategies (Morgan, Digsdag, & Saenger, 1998), personality (Atman, 1988; Biner, et al., 1995; Ehrman, 1990), student satisfaction (Biner, Barone, Welsh, & Dean, 1997; Biner, Summers, Dean, Bink, Anderson & Gelder, 1996), and students' skills (Cragg, Andrusyszyn, & Humbert, 1999). Other studies have investigated or reported on items that affect student

learning such as teaching methods (Andrewartha, 1996; Limbach, Weges, & Valcke, 1997), mode of teaching (Cukier, 1997; Dymock & Hobson, 1998), program design (Inglis, 1996), institutional support (Mann, 1998), and program evaluation (Biner, 1993; Cheung, 1998; Nielsen, 1997).

Student Outcomes

When assessing student learning in a distance education class or program, the benchmark for many researchers has been to compare the academic performance and attitude of learners in a distance learning situation to those involved in a traditional setting (Adelskold, Aleklett, Axelsson, & Blomgren, 1999; Biner, 1993; Biner, Bink, Huffman, & Dean, 1995; Bischoff, Bisconer, Kooker, & Woods, 1996; Cookson, 1989; English, Harrison, & Hart, 1998; Souder, 1993; Thomerson & Smith, 1996; Westbrook, 1997). For students involved in televised or interactive television, the results have been similar (Biner, et al., 1995, English, et al., 1998). A comparison of learners in televised courses to learners in a traditional learning environment has shown that "students taking televised courses perform as well as--often better than--their traditionally taught counterparts" (Biner, et al., 1995; Moore & Thompson, 1990; Simonson, 1997; Westbrook, 1997).

Student Satisfaction

Studies related to student satisfaction with distance learning have been conducted in a other areas. One study by Biner et al. (1997) reported that student satisfaction in televised college courses was affected by remote-site group size. This investigation showed that larger group size resulted in decreased student satisfaction and outcomes. As the group size decreased, the student satisfaction and outcomes increased.

In a study looking at student perceptions in a college course taught by satellite, Barker and Platten (1988) reported that "most students felt that televised instruction via satellite maintained their interest as well as did regular classroom instruction" (p. 46). However, 38.4% regarded satellite instruction as being less interesting than that of a traditional classroom. Students' compared the difficulty of learning by satellite instruction to that in the regular classroom, and 46.2% reported that instruction by satellite was "somewhat harder" (p. 46).

Although there is very little research aimed at determining the effect of student satisfaction on learning through distance education, Biner, Dean, and Mellinger

(1994) emphasize the importance of measuring student satisfaction.

When satisfaction measures are incorporated into research efforts, they are often given little attention in final reports or manuscripts. Distance learner satisfaction is an inherently important criterion by which to judge the effectiveness or success of a tele-education course, a criterion that is arguably as important as distance learner performance. (p. 61)

Ongoing assessment of student satisfaction is an important endeavor in order to "modify or fine tune" a program.

Instructor Contributions

Instructors need to be prepared for teaching at a distance by understanding that traditional teaching methods are not as effective in the distance education classroom (Keegan, 1996; Moore, 1990). "Faculty engaged in distance education must be adept at facilitating students' learning through particular attention to process, unlike classroom-based teachers whose traditional role is largely confined to selecting and sharing content" (Beaudoin, 1990, p. 21). Beaudoin goes further to state that "in addition to being adept at both content and process, faculty must recognize the role of instructional technology as a learning resource" (p. 22).

Principles of adult education such as andragogy, self-directed learning, and transformative learning apply to instructors in distance learning situations. The role of the instructor is to facilitate learning rather than be a sole source of information (Brookfield, 1986; Knowles, 1980; Mezirow, 1991).

Program Evaluation

The process of program evaluation is one way for educational programs to improve the quality of their services. "Evaluation is a process of making judgments or applying values in a given situation" (Verduin & Clark, 1991, p. 183). Reports of program evaluation in distance education can be found in the literature, but most provide only a "snap-shot" in time, and few look at programs over an extended period of time (Whitworth, 1999). Success of a program is "dependent on an effective monitoring and evaluation system" (Moore, 1999, p. 1). This can be done in both formative and summative fashion, but for specific courses it should be done in a formative manner "while there is still enough time to take remedial action" (p. 1).

Program evaluation can be performed in a variety of ways, but the important issue is that it be done. Examples in the literature support education and distance education using a variety of systematic methods including

questionnaires, focus groups, interviews, peer review, and course review (Knowles, 1980; Moore, 1999; Zemke & Kramlinger, 1982).

Formative evaluations are especially effective for program evaluation of distance education programs because "formative evaluation takes place when distance education activities are still fluid and when new directions can still be defined" (Verduin & Clark, 1991, p. 185).

The majority of the literature addresses distance learning from the perspective of the individual learner in isolation or in a single course setting. However, more is being published about the educational programs themselves. Many of these programs do not require prerequisite knowledge in order for the learner to complete a program, nor do these programs constitute a professional program. Professional programs that have been offered specifically to health professionals using video technology have included nursing, nurse practitioner, nutrition, and physical therapy (Andrusyszyn, Soeren, Laschinger, Goldenberg, & DiCenso, 1999; Cragg et al., 1999; English et al., 1998). Of these references, the only one to discuss learning outcomes was a physical therapy program offered by video technology at the University of Kentucky. This program provided on-site faculty and labs to its students

(English et al., 1998). No difference in outcomes between distance site and main site students was identified.

Much of the information and resources needed for program evaluation are available to instructors and administrators, and an effort must be made to critically evaluate programs for effectiveness. Program evaluation can benefit programs like the professional physical therapy program at the University of Oklahoma because it serves to strengthen student learning.

CHAPTER 3

METHODOLOGY

Design

This study was descriptive and utilized a case study design. Case studies allow one to use research and "take account of the context and also the relevant forces outside the unit being studied" (Merriam, 1988, p. 2). This design aids in "understanding and interpreting observations of educational phenomena" (p. 2) in a study such as this which describes the process of student learning in a dual-campus professional physical therapy program using distance education. "Four characteristics are essential properties of a qualitative case study: particularistic, descriptive, heuristic, and inductive" (Merriam, 1988, p. 11).

The term particularistic refers to "a case study that focuses on a particular situation, event, program, or phenomenon. The case itself is important for what it reveals about the phenomenon and for what it might represent" (Merriam, 1988, p. 11). Descriptive characteristics show "that the end product of a case study is a rich, 'thick' description of the phenomenon under study" (p. 11). The term heuristic is used to describe how "the case study illuminates the reader's understanding of the phenomenon under study. Case studies can bring about

the discovery of new meaning" (p. 12). Inductive means that "for the most part, the case study will rely on inductive reasoning. Generalizations, concepts, or hypotheses emerge from an examination of data--data grounded in the context itself" (p. 12).

This study was approved by the Institutional Review Board at Oklahoma State University and focused on the distance education program in physical therapy at the University of Oklahoma Health Sciences Center (OUHSC). It is one of six such programs in the United States. Since it has been recently developed, a formative program evaluation is needed to help direct its development. This evaluation sought to describe student learning and perceptions of the program. The results of this study will be used to increase the understanding about how students learn in this setting and what factors influenced that learning.

Population

The population consisted of forty-seven students enrolled in their first year of the professional physical therapy program at the OUHSC at the time of this study. Seventeen of the students were located on the Tulsa campus and the remaining 30 were located on the Oklahoma City campus. Students on both campuses had to meet the same criteria for admission into the professional program.

Student's contributions to this study were confidential and known to only that student, individuals within specific focus groups, the researcher, and invited outside observers. Although all students at the Tulsa site were encouraged to participate in the study, participation was voluntary. Students volunteered, rather than being given the option to not participate. All 17 of the students on the Tulsa campus volunteered to participate in the study and signed a consent form.

The Researcher

The purpose of a descriptive study is to describe elements within a specific contextual setting. To do so, "the researcher must be sensitive to the context and all the variables with it including the physical setting, the people, the overt and covert agendas, and the nonverbal behavior. One also needs to be sensitive to the information being gathered" (Merriam, 1988, p. 38). When collecting qualitative data, "one of the cardinal principles of qualitative methods is the importance of background and context to the process of understanding and interpreting data" (Patton, 1980, p. 9).

As the primary data collection instrument in qualitative research, the researcher must have an awareness of the relationship of the researcher to the context of the

study (Lincoln & Guba, 1985; Merriam, 1988, p. 19, 36; Patton, 1987). "Data are mediated through this human instrument...The researcher as instrument is responsive to the context; he or she can adapt techniques to the circumstances; the total context can be considered" (Merriam, 1988, p. 19). Qualitative research requires that the evaluator "get close to the people and situations being studied in order to understand the minutiae of the program life. The evaluator gets close to the program through physical proximity for a period of time, as well as through development of closeness in the social sense of intimacy and confidentiality" (Patton, 1983, p. 43).

As the only full-time physical therapy faculty member on this campus I am in a unique position that allows me to see what occurs on a daily basis. Because I am constantly involved with these students I am connected to this project. I can observe things in a way that is not disruptive or leading, but allows me to have an intimate understanding of the learning situation.

Data Collection

Several sources of quantitative data were used in this study. The quantitative data included students' recorded data which includes demographic characteristics, personal scores on the Myers-Briggs Type Indicator (MBTI) and the

Assessing the Learning Strategies of Adults (ATLAS) instrument; entering science grade point average (GPA); and attitude toward videoconferencing as determined by a questionnaire. The students' entering science GPA was compared to the students first two-semester GPA in the program with an analysis of covariance (ANCOVA). These methods will provide quantitative information about student learning in the program as an aid in the description of student learning in the program.

The qualitative data was collected through observation of the program participants, focus groups, and interviews. The MBTI classification as extrovert or introvert was used to assign participants to one of two focus groups. Questions for the focus groups were based on information received from group observation and the attitude toward videoconferencing questionnaire. Students were then interviewed individually with questions based on group observation, attitude toward videoconferencing, focus group responses, and learning strategies as determined by ATLAS. This information provided data about program participant's perceptions and learning in the program.

Thus, both quantitative and qualitative data were used to add to the trustworthiness of the findings by using multiple methods to assess student learning in the program.

From a practical standpoint, most evaluators [of distance education programs] now use a combination of quantitative and qualitative measures. Certainly, there is a need to quantify and count. Just as certainly there is a need to understand opinions and hear perspectives. (Simonson, 1997, p. 89)

Instruments

Student Attitudes

An instrument to measure student attitudes toward televised courses was developed by Biner (1993) in order to facilitate the evaluation of a distant site campus. The value of this instrument, the Interactive Videoconferencing Evaluation Questionnaire, is its ability to gather information about student's attitudes regarding the program so that needs may be identified and appropriate changes may be made.

Because of the significance of people's perceptions for behavior and learning, it is most important for educators to consider those things that determine or affect human perception. (Verduin & Clark, 1991, p. 142)

The original instrument was used to gather information from students who were involved in only one interactive videoconference course. With permission from the author, a modified version of that instrument was used to gather information about student attitudes that adequately reflects multiple course involvement. The instrument is divided into four sections. Students answered questions

using a five point Likert-type scale: Very Poor = 1, Poor = 2, Average = 3, Good = 4, Very Good = 5.

The first section identifies student's attitudes regarding instruction/instructor characteristics. Specific questions about timeliness, clarity, preparation, quality, techniques, and environment are included in this section. The second section identifies student's attitudes about technological characteristics. Items in this section relate to the quality, clarity, and confidence in the technology used in this program. The third section identifies student attitudes toward course management and coordination. Issues addressed include communication, accessibility, conscientiousness, and promptness in the courses that constitute this program. The final section gathers demographic information including number of televised courses taken prior to the current semester, overall rating of the televised courses, and workload assessment (See Appendix A). Content validity has been established for this instrument (Biner, 1993).

Learning Strategies

Assessing The Learning Strategies of Adults (ATLAS) was used to explore the learning strategies of the students in the program. These learning strategies were used to form meaningful groups in order to identify students'

perceptions about the program. ATLAS divides learners into three groups based upon the preferred strategies for approaching a learning task. These groups are: Navigators, Problem Solvers, and Engagers. "Learning strategies are those techniques or specialized skills that the learner has developed to use in both formal and informal learning situations" (Fellenz & Conti, 1989, p. 7). "Navigators are focused learners who chart a course for learning and follow it" (Conti & Kolody, 1999, p. 9). "Problem Solvers are learners who rely heavily on all the strategies in the area of critical thinking" (pp. 11-12). "Engagers are passionate learners who love to learn, learn with feeling, and learn best when actively engaged in a meaningful manner" (p. 13). "The Navigators and Problem Solvers initiate a learning task by looking externally to themselves at the utilization of resources that will help them accomplish the learning. Engagers, on the other hand, involve themselves in the reflective process of determining internally that they will enjoy the learning task enough to finish it" (p. 18).

Construct validity, content validity and criterion-related validity has been established for this instrument (Conti & Kolody, 1999, pp.16-20). Reliability for this

instrument has been established but not published (Gary Conti, personal communication, January 22, 2000).

Understanding these groups provides more information about the learner. This type of information can help the student and instructor understand what types of learning situations and resources are helpful to the student in the learning process.

Personality Type

Psychological preferences of students as indicated by the Myers-Briggs Type Indicator were used to determine if such preferences affect students' perceptions about the program. The MBTI is an established tool in identifying personality type. It is based on the work of Swiss psychiatrist Carl G. Jung to explain normal differences between healthy people (Myers, 1998, p. 3). This self-report questionnaire defines patterns of behavior into eight different categories or types. Types are paired in four groups: extroversion-introversion, sensing-intuition, thinking-feeling, and judging-perceiving. According to Myers (1998) "the MBTI preferences indicate the differences in people that result from the following:

- Where they prefer to focus their attention and get energy (Extroversion or Introversion).
- The way they prefer to take information (Sensing or Intuition).

- The way they prefer to make decisions (Thinking or Feeling).
- How they orient themselves to the external world-
-with a Judging process or a Perceiving process
(Judging or Perceiving). (p. 5)

The College of Allied Health at the University of Oklahoma Health Sciences Center chose to administer the MBTI to all new students during the orientation process. Students were encouraged to sign a release so that the findings could be shared with the faculty. Faculty received an educational in-service on the different types and how they could affect the educational process.

This study specifically uses the bipolar categories of extroversion and introversion. These categories allowed for meaningful and purposive grouping of students in the focus groups. Myers (1998) differentiates between those in these two categories in the following way:

Extroversion refers to people who like to focus on the outer world of people and activity. They direct their energy and attention outward and receive energy from interacting with people and from taking action.

Introversion refers to people who like to focus on their own inner world of ideas and experiences. They direct their energy and attention inward and receive energy from reflecting on their thoughts, memories, and feelings. (p. 6)

Students were grouped by this classification for focus groups so that similarities among members of the group could be identified.

Observation

Observation was used to gather qualitative data related to the daily operation of the students in their classroom learning. "The purpose of observational evaluation data is first to describe the program thoroughly and carefully. This includes describing the activities that took place in the program, the people who participated in those activities, and the meaning to those people of what was observed" (Patton, 1987, p. 72). This type of data collection provides the observer several advantages:

1. The context within which the program occurred.
2. How the experience actually occurred, thereby making the most of an inductive, discovery-oriented approach.
3. To observe routine things that may escape conscious awareness among participants in the program.
4. Allows the observer to learn about things participants may be unwilling to discuss.
5. To move beyond the selective perceptions of others.
6. Firsthand experience can be used as a resource to aid in understanding and interpreting the program being observed.
(Patton, 1987, p. 73)

Observational data were gathered on a daily basis both formally and informally. This occurred during class, labs,

and other encounters on campus. Notes were taken and a journal was kept throughout the year in order to document what was observed. Students on the Oklahoma City campus were observed during three on-site visits and from a distance. Classes on the Tulsa campus that were observed included courses in which the researcher participated in and courses that others were teaching. Journal entries were made weekly with additional entries when things of special interest occurred. The journal was analyzed by coding entries and looking for themes. As themes emerged from the data the researcher looked more closely at these items. Students' adaptation to the learning environment and how they established themselves as a part of the program were of key importance. Key points included:

1. Observing how the students adapted to a classroom utilizing distance technology.
2. Observing how the students organized themselves. Did they work as one large unit, in cliques, as individuals, or as a combination of each?
3. Observing the student interaction between the two campuses.
4. Observing the student interaction both with faculty at the main site, as well as their interaction with faculty on the distant site.
5. Observing how students dealt with perceived inequality or inequity between the campuses.

Focus Groups

Focus groups were used in this study to identify students' attitudes, perceptions, and opinions about

learning and their learning environment. These groups were also used so that a profile of students identified as introverts and extroverts could be created. A focus group is a form of qualitative research that allows the researcher an opportunity to identify a group's attitude or perception about a certain topic (Morgan, 1997; Patton, 1987; Zemke & Kramlinger, 1982). "The overall goal is for the team to learn from the participants" (Williams, 1999). Focus groups also allow the researcher to interview a group of 6 to 8 individuals in a 1 to 2 hour period rather than spending the same 1 to 2 hour period with each individual (Morgan, 1997; Patton, 1987). The concept of group interviews was discussed as early as 1926, but not widely accepted or considered as a research method (Morgan, 1997, p. 4). Market researchers began to use this technique in the 1950's as a way to identify the wants and needs of various consumer groups (Morgan, 1997; Patton, 1987; Zemke & Kramlinger, 1982). Although this was a popular technique in the 1950's, it all but disappeared as a research tool until the 1980's (Morgan, 1997, p. 4). The use of focus groups started being used frequently by social scientists and others as the 1980's progressed. The first text to address the use of focus groups for qualitative research appeared in 1987 (Morgan, 1997, p. 5).

There are three basic uses of focus groups (Morgan, 1997). Self-contained focus groups serve as the principle focus of the research (p. 2). A focus group that supports another primary form of research is known as supplementary (p. 2). The final use is a multi-method focus group that combines two or more means of gathering data about a subject (pp. 2-3). This study used data from focus groups in combination with observation, interviews, and instruments.

The most common forms of gathering qualitative data include group observation and individual interviews (Morgan, 1997). Observation allows the researcher to observe the group being studied and allows for identification of patterns and themes in group action. Whereas group observation and individual interviews can take much time to gather information, focus groups allow the researcher to gather large amounts of data about a specific topic in a small amount of time (Morgan, 1997; Patton, 1987; Zemke & Kramlinger, 1982).

Group observation tends to be more naturalistic than focus groups, but "topics such as attitudes and decision making" are not easily observed (Morgan, 1997, p. 9). Compared to individual interviews, focus groups do not allow for intimate communication between the participant

and researcher. However, focus groups may allow for increased dialog about a topic and allow the researcher to hear what the consensus of the group might be (Morgan, 1997). "Group dynamics help focus on the most important issue" (Patton, 1987, p. 134). When using focus groups as part of multi-method research, it is important to determine how the focus groups will be linked to other parts of the data.

When linking focus groups to group observation, the focus groups may be used to confirm what the researcher believes was observed based on the information the groups provide (Morgan, 1997, p. 24). In this study, the researcher is using the focus groups to gather information about students' attitude, perceptions, and opinions, all of which are difficult to observe.

Focus group participants can be selected in a number of ways. They can be acquaintances or strangers who are brought together to help answer questions about an identified topic (Williams, 1999, p. 2). However, method used to identify members of a focus group is at the discretion of the researcher (Morgan, 1997; Patton, 1987; Williams, 1999; Zemke & Kramlinger, 1982).

Morgan (1997) describes the concept of homogeneity and segmentation as "the decision to control the group

composition to match carefully chosen categories of participants" (pp. 34-36). In this study the Myers-Briggs Type Indicator (MBTI) was used to identify individuals based on the way they relate to others and use or direct energy. Focus groups were held with each group separately. Using the introvert and extrovert section of the MBTI allowed the researcher to identify what the profiles of student's perceptions are about the program based on personality type. A variety of studies support categorizing groups in this way through the use of assessment tools (e.g., Lockwood, 1997).

Morgan (1997) believes that since the use of focus groups as a qualitative tool in research is fairly new, there is no right way to run a focus group (p. 74). He believes that "rules of thumb" based on a review of the literature are helpful, but he warns against following the path of others blindly (p.73).

In looking forward to a future generation of focus group researchers, from both other disciplines and within our own ranks, I believe that we need to offer them two things. First, we need to provide clear statements about what our procedures are and why we have been doing focus groups this way--that is, we need to share the current state of the art. Second, we need to give them a mandate to produce new and better ways to do focus groups--that is, we need to advance the state of the art. (pp. 73-74)

Seven students participated in the focus group with introverts and eight students participated in the group with extroverts. The focus groups were held in one of the student classrooms with tables arranged in a diamond pattern so that the participants could clearly see each other. Each focus group was scheduled to last from one to one and one-half hour in length. The focus group questions were worded and organized in a fashion to allow the researcher to identify students' attitudes, perceptions, and opinions in a manner that was not leading or threatening. The focus group questions were:

1. Think about your experiences in this program. Tell me about those experiences and how they have helped you in the learning process. How have they hindered you in the learning process?
2. Think about how you felt after being accepted into this program on the Tulsa campus. How did you feel about learning in a distance program then, and how do you feel now?
3. "If you were in charge of this program, what kind of changes would you make" (Williams, 1999, p. 18)?
4. "What would it take for this program to get a gold star? If this program did receive a gold star, what would it be for" (Williams, 1999, p. 18)?
5. Think about how you envisioned physical therapy school prior to starting the program. Tell me about that, and tell me how your concept of the profession has changed.
6. "If you were the moderator of this session and wanted to know more about the process of

student learning in this program, what would be the next question you would ask the group" (Williams, 1999, p. 18)?

Following each focus group the audio recordings were transcribed and coded. Coding was done by labeling quotes according to themes, sorting the themes into groups, and then collapsing similar groups. The researcher coded the data using a word processor. Information was labeled according to the content, context, and meaning of the quote.

Interviews

Interviews were conducted with students in the program to identify their thoughts, perceptions, and attitudes about learning in this program. Interviewing is a form of qualitative research that "allows the evaluator to enter another person's world, to understand that person's perspective" (Patton, 1987, p. 109). An interview is one way to identify a person's opinion, attitude, and perspective. "We interview to learn about things we cannot directly observe" (Patton, 1987, p. 109). In those situations where the goal is to know about a person's feelings, the researcher must ask questions (Morgan, 1997; Patton, 1987; Zemke & Kramlinger, 1982).

There are three basic types of interviews (Patton, 1987; Zemke & Kramlinger, 1982): informal conversational

interview, general interview, and standardized open-ended interview. The informal conversational interview is more conversation oriented with no true structure to the agenda. The general interview relies on a list of issues to be explored, but the specific questions may vary from participant to participant. The standardized open-ended interview was used in this study. This type of interview "consists of a set of questions carefully worded and arranged for the purpose of taking each respondent through the same sequence and asking each respondent the same questions with essentially the same words" (Patton, 1987, p. 112). Although this type of questioning "increases comparability of responses", it may also "constrain and limit naturalness and relevance of questions and answers" (p. 117).

Interview questions in this study focused on opinion and belief. "These questions are aimed at understanding the cognitive and interpretive processes of people. Answers to these questions tell us what people think about the world in a specific setting" (Patton, 1987, p. 118). The questions for this study were formulated to give the researcher insight into students' preferred instructor characteristics and learning resources. The questions asked were:

1. Think about the variety of instructor characteristics that you have been exposed to in this program. What instructor characteristics have helped you in the learning process?
2. What instructor characteristics have hindered your learning process?
3. Think about all of the resources that you have used to help you in the learning process as a student in this program. What resources have been most beneficial?
4. What resources have been least beneficial in the learning process?
5. Based on the experiences that you just discussed, what instructor characteristics and resources would help you learn best in this program?

Interviews were conducted in the researcher's office and lasted approximately 20 minutes in length each. Notes were taken during the interviews and audio recordings were transcribed for clarity. Common answers to questions were identified and assessed according to frequency and student's learning strategies as determined by ATLAS. Emerging themes were identified in the data.

Grades

Outcomes as defined by students' grades were used to determine the level of learning. The grades of the students on the Tulsa campus were compared to those of students on the Oklahoma City campus to identify differences between the groups. The students' grade point averages (GPA) were used to determine differences between the groups. Although

this study is describing the development of the distant site of this program, outcomes as determined by grades ultimately determine the success or failure of the development of this site.

The average entering-science GPA based on the specific 37 hours required for each group of students was determined. The first semester and second semester GPA of each group was then be noted. The differences between the two groups' outcomes were determined through an analysis of covariance (ANCOVA) using SPSS 9.0.

CHAPTER IV

STUDENTS AND THEIR ENVIRONMENT

Introduction

Seventeen full-time professional physical therapy students participated in this study during the Fall 1999 semester and the Spring 2000 semester. These students were enrolled in their first two semesters of an eight-semester dual-campus program that used distance technology to bridge the two campuses. Of the 47 students who completed the first two semesters, 17 were in Tulsa and 30 were in Oklahoma City. Data were collected from multiple sources. Sources included observation, focus groups, interviews, attitude toward videoconferencing questionnaire, personality type characteristics (MBTI), learning strategies (ATLAS), and outcome comparison as determined by grades. Personality type characteristics, the first attitude toward videoconferencing questionnaire, demographics, and observation data were collected during the Fall 1999 semester. Learning strategy, the second attitude toward videoconferencing questionnaire, focus groups, interviews, and observation data were collected during the Spring 2000 semester. The statistical analysis of outcomes as determined by grades was calculated by

analysis of covariance (ANCOVA) after the Spring 2000 semester.

Student Demographics

Demographic data were collected from the students as part of the survey and from student records. Demographic data help describe the participants in the study. Of the 17 students enrolled in the professional physical therapy program at the OUHSC-Tulsa campus, all or 100% of the students agreed to participate in the study. Participants included 12 females and 5 males. The average age of participants in this study was 24 with a range from 21 to 34. Of the participants three had previously earned an associates degree, eight had earned a bachelors degree, and one had earned a master's degree. Three students identified themselves as belonging to an ethnic minority group: two Native Americans, one Cherokee and one Caddo, and one Asian-American of Vietnamese origin.

Faculty and Support Staff

The researcher was the only full-time physical therapy faculty member on the Tulsa campus along with one full-time occupational therapy faculty member. The physical therapy faculty member began his teaching career 3 months prior to the beginning of the program. The occupational therapy faculty member had taught on the Oklahoma City campus for 7

years in the 1980's, was director of an occupational therapy program for 1 year, and returned to teaching 2 months before this program started. One staff member from the College of Allied Health was located on the Tulsa campus. She served as a representative of the Dean's office and the Office of Student Academic Services. She had been located on the Tulsa campus for 1 year prior to the beginning of this program.

During the second semester, two additional instructors participated in laboratory experiences. One physical therapy instructor drove from the Oklahoma City campus to participate in the two laboratory sessions that took place on Tuesdays. One part-time occupational therapy instructor also participated in approximately half of these labs.

OneNet®

OneNet® is a fiber optic network that serves as "Oklahoma's official telecommunications and information network for education and government" (www.onenet.net). This network is an electronic link between 46 "hub sites" that cover the state. This system utilizes "fiber optic cable, digital and analog microwave, satellite, and wireless technology to transmit video and data services" (www.onenet.net). Each hub site contains a variety of equipment supporting the link between sites and equipment

that allows for information to be given and received in a variety of ways including video images, audio, and computer images. The University of Oklahoma uses the OneNet® system to provide courses, programs, and services between students on the Oklahoma City and Tulsa campuses. Technical support and scheduling access is available 7 days a week.

OneNet® Equipment

Each distance education classroom on the University of Oklahoma Health Science Center (OUHSC) campuses has the equipment required by the OneNet® system and accessory components added by the college. According to time and location, the network schedules the OneNet® system at the request of the college. Each hub site has the ability to send one outgoing signal at a time, and the host site can send a single signal to one or more locations. A site is designated as the host site during scheduling. The outgoing signal can be computer or video based and can be controlled from the main site or hub site. The site controller is located in an instructor console that includes a personal computer controller, outgoing monitor, Elmo camera, remote controls, and audio controls.

PC controller: The personal computer (PC) in the system has a program known as "SC Series" that allows the instructor to control camera movement, camera choice, video

cassette recorders, video and computerized signals, and some accessory functions. This PC is also connected to the university network so that instructors can log-on and access personal files and e-mail. Other software programs frequently used include Microsoft Word and Microsoft Power Point. When instructors want to change cameras, they must use the sight controller function to pick the camera of choice and to pan or tilt the camera until it is in the proper location. There are six camera location presets available for each of the two cameras in the classroom.

ELMO visual presenter (EV-400AF): This piece of equipment can serve a variety of functions, and many of them are similar to a standard overhead projector. This visual presenter is located on the instructor console and is tied into the PC controller. The ELMO has two overhead lamps that illuminate a white background for presentation of objects and materials. The image is computerized and projected onto a screen for viewing by all sites. A base lamp is available and can be used for viewing transparencies and radiographs. Two video inputs allow for linking with video equipment such as cameras so that video material can be used regardless of the video tape format. Items can be projected in black and white or color.

Outgoing monitor: This 13" television is recessed behind glass in the top of the instructor console. It serves as a confidence monitor and always shows what is being projected to distant sites.

Student camera: The student camera in the main classroom is located above and behind the instructor console. It has the ability to capture the complete student seating area. It has zoom, pan, tilt, and focus functions. Cameras are controlled with a remote control and with the PC controller.

Instructor camera: This camera is located in the center of the room and is suspended from the ceiling. It has the ability to capture the east-end of the classroom. Its functions are the same as those of the student camera and controlled with a remote control or with the PC controller.

Data projector: This data projector by Eiki® is located in the center of the room and is suspended from the ceiling next to the instructor camera. This projector is capable of sending both video and computer signals to a projector screen that electronically raises and lowers from the ceiling. The instructor must use the remote control assigned to this unit to switch between computer and video modes.

Sound system: The sound system controls are housed in the instructor console. These control student microphones, the instructor microphone, room amplifiers, and audio-in speakers.

Student microphones: Twenty-seven student microphones are located on the student tables. Each microphone is approximately 4" x 3" x 1". The way the room is situated there is generally one microphone for every two students. When students speak during class, they should push the button marked "Push" on the microphone. When the microphone is on, a green light located on top of the unit is lit. Student microphone volume can be controlled individually for outgoing volume at the instructor console.

Instructor microphone: The instructor microphone is a wireless microphone that has two controls located on the unit itself, off/on and mute. The outgoing volume can be controlled from the instructor console.

Room amplifiers: There are six speakers located in the back half of the ceiling, and they amplify comments made by students in the local classroom. These speakers are connected to a central volume control in the instructor console.

Audio-in speakers: These two speakers are mounted on each side of the projector screen. They project incoming

sound and are controlled individually from the instructor console.

Other equipment located in this room which aid in the process of distance education include a 60" television, a 20" confidence monitor, and a white board.

60" television: This television is on a raised platform in the corner of the classroom and has the capability of displaying the outgoing or incoming signal. Students generally watch a presentation on this television or on the projector screen.

20" confidence monitor: This television is located in the center of the room and is suspended from the ceiling next to the Eiki®. This monitor faces the front of the classroom and lets the instructor see the incoming signal from a distance site.

White board: This marker board is a SmartBoard® but has only been used as a board for writing and drawing. It is located on the wall of the classroom.

Physical Environment

The distant site of this program is located on the OUHSC-Tulsa campus at 2808 South Sheridan Road in Tulsa, Oklahoma. This campus has been home of the College of Medicine in Tulsa since 1977. The campus is a 15-acre, 6 building complex that houses a number of OUHSC groups. At

the time of this study, the OUHSC-Tulsa campus was home to the College of Medicine and its approximately 70 third- and fourth-year medical students and residents. The College of Allied Health and its physical and occupational therapy programs brought the first full-time students to this campus. These programs are located in the Library Building. The Library Building is a 19,550 square feet, 2-story building that is centrally located on the campus. It houses the College of Allied Health, College of Pharmacy, Bioethics Center, Office of Resident Student Affairs, Prospective Student Services, Personnel Department, and OUHSC-Tulsa Library.

The Library Building, which was once a church, has a library with computer rooms and offices, two College of Medicine offices, a classroom, and a lounge on the first floor. The classroom was modified to meet the needs of the physical and occupational therapy programs and currently serves as the laboratory. The second floor includes the Personnel Department, College of Allied Health, Bioethics, College of Pharmacy, Prospective Student Services, and three classrooms. Two of the classrooms were modified to meet the distance technology needs of the physical and occupational therapy programs. The other was equipped to serve as a resource room for the physical and occupational

therapy programs. For a more complete description of the physical environment see Appendix B.

Researcher's Observations

Three factors influenced the effectiveness of this equipment in the process of student learning. The quality of sound, visual imaging, and an understanding of how the mechanics of the system worked had some adverse affects on student learning.

Sound

Often the sound quality of the class transmission was distorted for a variety of reasons. One reason related to the placement of the microphone. At times poor sound quality was a result of improper use of the microphones. For instance, once an instructor clipped her microphone to an area close to her necklace, and then a loud noise would be heard when the microphone made contact. At other times, the quality of a students or instructors speech required that the microphone be held close to the mouth rather than clipping the microphone to clothes or leaving the student microphone on the table.

Another reason for poor sound quality was that the speakers were not always set correctly. If the room amplifiers were set too low, then students in the back of the classroom might not hear comments made by someone in

the front of the classroom. If the room amplifiers were set too high, the speaker would hear herself so loudly that it would give the impression that she was speaking too loudly when in fact she was barely being heard at the distant site. If the instructors stood under the audio-in speakers and had their microphone turned on while a student was speaking, then a feedback loop was created which distorted the sound.

Visual

Many times the visual quality of images was not sufficient. One reason was that the mode of transmission was not always appropriate for the type of image being sent. An understanding of the modes that images are best sent in and received in often helped the visual quality, but not in all situations. Another reason is the number of times the image is reproduced can reduce the quality of the video transmission. Items such as radiographs, ultrasound images, and computerized tomography images were often difficult to view because of the way they were sent. Many times these images were imbedded in a Power Point presentation that computerized the image and made it difficult to see when using a video system. At other times images were not sent over the computer, but instead they were shown in Oklahoma City as a projected computer image

and sent to Tulsa in video form by the instructor camera. By the time the image was projected or viewed in Tulsa, the image was distorted to some degree due to degradation of the signal.

Lighting also had an effect on how well images were sent and received. Although the Tulsa classroom had three different lighting sources and multiple combinations of use, the use of lighting was never consistent. Students never agreed on which form of lighting was most effective.

Videoconferencing Mechanics

Mastery of the actual mechanics of the videoconferencing system proved to be a challenge to most course instructors, especially during the first semester of the program. Although the faculty received training in the use of the equipment, much of their practical experience came from actual class time. As the instructors' mastery of the mechanics improved, videoconferencing efficiency and efficacy also improved.

The amount of time required for instructors to gain workable knowledge of the distance technology and how to incorporate it with their teaching varied but seemed to be closely related to the amount of experience using the technology. During the first semester, only a few of the courses had more than one instructor. When only one

instructor was used for the presentation, more time was required for equipment management unless someone volunteered to manage the instructors' console. This was due at times to the instructor's lack of familiarity with the equipment and at other times due to the amount of time required to work the equipment. Instructors rarely changed camera view during class unless there was an additional person performing that function.

Course instructors generally used a variety of applications during presentations including Power Point presentations, items to be projected, video recordings, and live demonstrations. Each of the applications used is controlled from the PC controller. The time required for changing camera views was increased when multiple applications were being used because the instructor had to manage more applications at the computer. The instructor or individual managing equipment had to spend more time at the computer and had to have a good knowledge about how to use the site controller while using computer applications.

Equipment

A variety of equipment not related to the distance technology supports student learning on the Tulsa campus. This includes equipment that supported media functions and laboratory functions. (See Appendix C)

Prerequisite Knowledge

Students who were admitted to this program were required to meet specific prerequisite requirements in order to be eligible for admission into the program. Admission is competitive and based on a number of factors. One of these factors is grades. In order to be eligible for the program, students were required to have successfully completed 90 semester hours of prerequisite coursework from an accredited college or university and to have a minimum grade point average of 2.75 on a 4.0 scale for all college work and natural science courses attempted. No grade below a "C" was accepted. Of those 90 hours, 37 were in the area of natural science. Required prerequisite coursework include:

Symbolic and Oral Communication

COMM 2613 Public Speaking
ENGL 1113 Principles of English Composition
ENGL 1214 Principles of English Composition II
MGMT 3012 Principles of Organization & Management
MIS 2003 Introduction to Business Computing
PSY 2003 Understanding Statistics

Natural Science

CHEM 1315 General Chemistry with laboratory
CHEM 1415 General Chemistry II with laboratory
HSS 3823 Physiology of Exercise
PHYS 1302 General Physics Laboratory
PHYS 2414 Physics--Life Science
PHYS 2424 Physics--Life Science II
ZOO 1114 Introduction to Zoology
ZOO 1121 Laboratory for Introduction to Zoology
ZOO 2124 Human Physiology with laboratory

ZOO 2255 Human Anatomy with laboratory

Social Science

PSY 3603 Child Development
PSC 1113 American Federal Government
PSY 1113 Elements of Psychology
PSY 2603 Developmental Psychology
SOC 1113 Introduction to Sociology

Humanities

HIST 1483 US History
PHIL 1103 Critical Reasoning

General Education

(For students who started college after Fall 1990)

Understanding Artistic Form
Western Civilization & Culture
Non-western Cultures
Foreign Language
(<http://w3.ouhsc.edu/ahealth>)

Schedules

Students' schedules included some form of class activity daily on Monday through Friday. Schedules included didactic sessions, laboratory sessions, tutorials, seminars, and clinical experiences. (See Appendix D)

The first semester schedule in the fall of 1999 included six didactic courses and two laboratory sections between August 23, 1999, and December 17, 1999. During this semester approximately 87.7% of the didactic sessions originated from the Oklahoma City campus.

The second semester in the spring of 2000 had classes or special sessions meeting daily on Monday through Friday from January 10, 2000, to May 5, 2000. During this semester, approximately 90.8% of the didactic coursework originated from the Oklahoma City campus. The remainder originated from Tulsa.

Access to Faculty

Students located on the Tulsa campus had one physical therapy faculty member located on their campus full-time. All other full-time physical therapy faculty were located on the Oklahoma City campus. Students had numerous ways to interact with faculty members. Students were able to e-mail instructors using personal or school computers, telephone instructors free of charge from campus, establish a OneNet® meeting with instructors, or schedule a meeting and drive to the Oklahoma City campus. In November a toll-free telephone number was given to students so that they could call the Oklahoma City campus free of charge when they were off campus. Students stated that they appreciated faculty arranging for phone conferences and videoconferences to discuss issues. They also appreciated when faculty gave a timely response to e-mail messages and requests for information.

Students made a number of comments about their access to faculty on the Tulsa and Oklahoma City campuses. One student stated that "It really helped when I would send an e-mail to a professor and he gave me an answer really quickly." Other students commented that setting a scheduled time to meet over the OneNet system was beneficial. One student commented, "It was nice and made it really clear when we were able to see the professor when they needed to be able to 'show' us something."

MBTI Profiles

The students completed the Myers-Briggs Type Indicator, Form G, during their orientation to the program. A variety of the 16 possible types were identified for students on the Tulsa campus. For the purposes of this study the introvert/extrovert component was used because this dichotomy offered some explanation about "attitudes or orientations of energy" (Myers, McCaulley, Quenk, & Hammer, 1998, p. 6). Eight of the students were identified as being introvert, and nine were extrovert. This classification was used to form two focus groups that sought to identify learner's attitudes, opinions, and perceptions about this program and student learning in this program. A profile of students in each group was developed through observation and focus groups.

Each focus group was one hour in length and students answered six questions in a semi-structured format. The focus groups were held two days apart in the secondary classroom. The students sat around four tables that were patterned into an elongated diamond shape with the moderator at one end so that each of the participants could have a clear view of one another. Two tape recorders were used to document vocal interaction during the session. An assistant moderator sat off to the side of the discussion and took note of what was said. The students were reminded that participation in this study was voluntary and that all information would remain confidential. After the focus groups were completed and the data were reviewed. Distinct similarities and differences between the two groups were identified, and these were compared to observation data.

Introvert Group

Introversions is described as "directing energy mainly toward the inner world of experiences and ideas" (Myers, et al., 1998, p. 6). Students in the introvert group tended to speak slower and with fewer speakers trying to contribute information at the same time. If two or more speakers began speaking at the same time, one or more speakers would generally stop speaking to accommodate the other. Often, students used gestures to pass the

conversation to another. Questions were answered in a fairly direct manner with little deviation from the topic in question. The moderator of the focus group had no problem controlling the flow of action in the group, if needed. It appeared that the group, more often than not, supported the views of others if they represented their own. There tended to be only a modest amount of discussion among group members about a question as compared to the extrovert group. Many of the responses from this group to questions included resources such as peers, faculty, technology, and the library. Many of the students in this group tended to focus on how they used resources rather than how resources affected them. One student remarked,

I have a problem getting questions answered because I don't like calling people on the phone. I don't feel like I can let people know what I'm trying to say. I'd like to sit down and say, "This is my problem", so that I know they know what I'm talking about.

During class, introverts were observed to be more hesitant about engaging with others during class. They tended to be more quiet and engage faculty and students on the main campus less than those in the extrovert group. In the beginning of the first semester, some students did not want to use the technology to answer or pose questions to the main site. During the first few months of the program,

certain students interacted with individuals at the opposite site with greater frequency and ease. Once the MBTI profiles were received from the examiner, it was revealed that a number of the more "reserved" students were identified as being introverted and those who were answering questions first were extroverts.

Extrovert Group

The extrovert focus group members were much more vocal than the introvert group members. During the focus group discussion this group tended to have more dialog between the group members before coming to some agreement about answers to given questions. Many times various group members agreed with others statements, but they made a point of providing their similar opinion even if they were discussing the same scenario. Members of this group tended to talk over one another, letting the loudest and most persistent take the lead of the dialog.

Many of the responses from this group to questions suggested a reliance on resources for learning. One student commented about using peer support as a resource,

We used to run into class and ask [the class] "What have you got?" There was always something due that we didn't know about. Now we're relaxed and realize that if something is going to be due like a paper that surely someone will say something. I don't have to keep a mental calendar in my head.

This reliance on resources was made evident in a number of comments made by members of the group. Specifically, comments made about action by faculty members that support the learning process were made. A student comment about organization was "if you [faculty] can stress organization skills, it helps." This group of students agreed that the Tulsa campus library did not have the resources they needed. One student commented, "I was frustrated looking for resources downstairs [Tulsa library]. You can go to the Bird Library [in Oklahoma City] and anything you get on the computer is right there."

One observation about members of this group is that they often asked questions of faculty on the main site at the request of their classmates who preferred not to ask questions. On several occasions the instructor on the Oklahoma City campus would ask a question of the students. The students in Tulsa would discuss the issue off-microphone and encourage their peers who frequently spoke in class to answer the question.

ATLAS Profile

Students learning strategies were identified using the ATLAS instrument. This tool identified students as having one of three preferred learning strategies. Seven of the

students were classified as being Engagers, eight were identified as being Navigators, and two students were Problem Solvers. This tool was used to identify how students prefer to use resources to help them in a learning task. This information can be used to help the learner better understand how they learn and the teacher better understand how to facilitate learning for the student (Conti & Kolody, 1998). A profile of this group of learners learning strategies was developed through use of the ATLAS, observation, and interviews.

Engagers

Students identified as Engagers tended to be true to the ATLAS description of this type of learner. "Engagers are passionate learners who love to learn, learn with feeling, and learn best when they are actively engaged in a meaningful manner with the learning task" (Conti & Kolody, 1999, p. 13). When describing how they learn best, seven of the eight Engagers mentioned "hands-on" or "activity". One student defined hands-on as "lab type activity or going into the clinic". One student commented, "When I read, I don't soak it in, but doing it really sinks it in." "Engagers seek out learning activities that provide the greatest opportunity for engagement: the interaction and

collaboration are major motivators for entering into the learning task" (Conti & Kolody, 1999, pp. 14-15).

Six of the eight Engagers mentioned that questioning, both giving and receiving, by faculty was an instructor characteristic that has helped them in the learning process while in this program. One student commented, "When they acknowledge your questions with a positive action, it's helpful--they think more about the process versus saying 'No, that's wrong.'" Another student stated that in most cases "you're never wrong!" Students agreed that when instructors answer questions in a positive manner they were more comfortable participating in the learning process. "One teacher pointed it out [being wrong] in the beginning of the program, and I was too intimidated to talk," one student stated. Instructor characteristics that learners in this group felt hindered the learning process included "vague" lectures, lecturing from notes, and talking "above the student's level".

A variety of resources were available to students. When questioned about what resources had been most beneficial to student learning, six of the eight Engagers identified the use of computers. One student reported that "E-mail for communication with professors [is a good resource] so that we can have a written answer to our

questions." Another commented, "Most of our research was done with the computer since we don't have all of the other resources, like a big library." Other resources that were identified as being beneficial to student learning include peer and faculty interaction and having access to instructors notes before or after a lecture.

Identifying resources that have been least beneficial centered on one area. Each student in this group commented on the lack of resources available in the OUHSC-Tulsa library. One student commented that he had been using other libraries because "this library is geared toward medical students and the selection is limited for our needs."

Navigators

Navigators are "focused learners who chart a course for learning and follow it" (Conti & Kolody, 1999, p. 9). Five of the seven students who were identified as Navigators commented that they learned best by "reading" or "seeing". One student commented that she has to "read it, hear it, study on her own, and then work in a group." Five of the students in this group suggested that "doing" an activity was helpful, but in all but one case it was the last thing mentioned.

"The characteristics of good and bad teachers can be identified and clearly described from talking to students" (Conti & Fellenz, 1988, p. 101). When asked to identify instructor characteristics that have helped them in the learning process, six of the seven Navigators commented that the instructor's ability to respond positively to questions was beneficial. One student stated that the "ability of the instructor to make you feel like every question is important" is helpful. Another student put it a different way, "It helps when they [instructors] always make you sound like your asking a good question." Other instructor characteristics that students perceived as being helpful in their learning process include providing "extra information", communicating with the student outside of class, and patience.

The most common instructor characteristics that this group identified as hindering the learning process included "assuming that [the student] already knows or should know information", lecturing "straight from the notes", and not relating to the students. One student stated, "It's so easy, and they know it so well, that they forget that it's not an easy concept for a new student."

The resource that Navigators felt was most beneficial to the learning process was the Internet. All seven of the

students in this category commented that computer access to research materials and instructor's notes was helpful. One comment was, "I like having access to notes on the Internet or e-mail so that I can pay attention in class."

"Planning, attention, identification, and critical use of resources" are characteristics of the Navigator (Conti & Kolody, 1999, p. 9). By providing information on computer, instructors help the Navigators plan and give appropriate attention to the task at hand.

All of the Navigators in this study identified the OUHSC-Tulsa Library as the least beneficial resource in the learning process. One student reported that "the library is a great resource for medical students...They are just not structured for therapy students." Another student reported that "our library has not been beneficial. They don't have the journals, books, or resources. I requested some journal articles and they came in after my paper was due." Yet another student stated that she would rather "go to the Oklahoma City library if I really have a need. It's frustrating to spend one hour to locate an article that you need and have to wait 5 to 7 days to get it by interlibrary loan." The library collection was the resource that this group discussed almost exclusively as being least beneficial.

Problem Solvers

There were only two Problem Solvers in this group. "Problem solvers are critical thinkers who rely on a reflective thinking process which utilizes higher order thinking skills" (Conti & Kolody, 1998, p. 11). Both of the students in this group identified instructor feedback and responsiveness to questions as helpful instructor characteristics. Each identified the OUHSC-Tulsa library as being the least beneficial resource and the instructors as being one of the most beneficial resources for learning. One Problem Solver stated that she learned best through multiple forms and approaches. "If I can see a picture, hear it, and write it down, it is a lot easier to get it out of the file cabinet in my head." Both students indicated that activity was beneficial to the learning process.

There were some similarities and some differences among the three groups. One similarity included how instructors questioned students and how they respond to questions. Another similarity was that all three groups agreed that the Tulsa library collection was inadequate to meet their learning needs.

Attitude Toward Videoconferencing Courses

Students on the Tulsa campus completed the Interactive Videoconferencing Evaluation Questionnaire (Appendix A) during the week prior to finals week both during the first and second semesters. This questionnaire was administered in order to gather more information about the students' attitudes and opinions of their experiences in this program. This 38-item questionnaire asked students to rate items in the following scale: Very Good = 5, Good = 4, Average = 3, Poor = 2, and Very Poor = 1.

In the first semester, all 17 students completed the questionnaire and rated only two items with a mean below "average". One question was related to the "timeliness with which papers, tests, and written assignments were graded and returned." The other question asked the student to compare distance courses to conventional classroom courses. All other questions had an average answer of average, good, or very good (see Table 1).

At the end of the second semester 16 students completed the questionnaire. Students only identified one item as being "poor" at the end of the second semester. That question addressed "the extent to which the room in which the class was held was free of distractions." All

other questions ranked as being average to very good (see Table 1).

Table 1. Mean Responses to the Interactive Videoconferencing Evaluation Questionnaire for the Fall and Spring semester.

<u>Question</u>	<u>Fall</u>	<u>Spring</u>	<u>Question</u>	<u>Fall</u>	<u>Spring</u>
1	3.76	3.93	20	3.47	3.87
2	3.47	3.12	21	4.23	4.15
3	3.76	3.81	22	4.58	4.43
4	3.82	3.75	23	3.70	4.00
5	2.94	3.18	24	3.52	3.5
6	4.17	4.06	25	4.41	4.31
7	3.41	2.31	26	3.05	3.81
8	4.47	4.06	27	3.88	4.06
9	4.05	4.12	28	4.17	4.00
10	4.35	4.25	29	4.29	4.12
11	4.29	4.43	30	4.11	4.18
12	4.05	4.12	31	3.52	3.68
13	4.52	4.25	32	3.76	4.12
14	4.17	4.06	33	3.94	3.81
15	4.64	4.75	34	3.76	4.00
16	4.11	4.25	35	2.82	4.00
17	3.17	3.00	36	4.05	3.93
18	3.35	3.68	38	3.82	4.18
19	4.29	4.00			

A t-test was used to compare the students' responses on the Interactive Videoconferencing Evaluation Questionnaire at the end of each semester. This statistical procedure can be used to examine the differences in two means (Huck, 2000). For this analysis, responses for both semesters were available for 16 of the students. Using a criterion level of .05, five items had a statistically significant difference (see Table 2).

Table 2. t-test of the Interactive Videoconferencing Evaluation Questionnaire by semester.

<u>Question</u>	<u>t</u>	<u>df</u>	<u>p</u>	<u>Question</u>	<u>t</u>	<u>df</u>	<u>p</u>
26	3.90	15	0.01	27	0.72	15	0.48
7	3.30	15	0.01	31	0.68	15	0.51
20	2.78	15	0.01	6	0.62	15	0.54
18	2.42	15	0.03	22	0.62	15	0.54
34	2.24	15	0.04	29	0.62	15	0.54
38	1.82	15	0.09	33	0.62	15	0.54
13	1.73	15	0.10	28	0.56	15	0.58
19	1.73	15	0.10	14	0.52	15	0.61
8	1.69	15	0.11	9	0.44	15	0.67
23	1.58	15	0.14	10	0.37	15	0.72
2	1.57	15	0.14	12	0.37	15	0.72
32a	1.46	15	0.16	21	0.32	15	0.75
5	1.43	15	0.17	3	0.29	15	0.77
1	1.07	15	0.30	17	0.27	15	0.79
15	1.00	15	0.33	25	0.27	15	0.79
35	1.00	15	0.33	30	0.21	15	0.84
36	1.00	15	0.33	4	0.00	15	1.00
11	0.90	15	0.38	24	0.00	15	1.00
16	0.90	15	0.38				

Five of the questions were found to have significant changes between the two semesters (see Table 2). Two of these questions had a statistically significant difference that was large enough to be of practical significance however, three of these (Questions 20, 18, and 34) had differences in the means that were so small that they were not practical ones.

Question 26 related to students "ability to access the library when, and if, needed." During the first semester, students rated this as "average" ($\bar{M} = 3.05$). At the end of the second semester, the students' rating of this factor had improved to near the "good" level ($\bar{M} =$

3.81). Students' views about their access to the library improved as their reliance on it as a resource for learning decreased. Between the first and second semesters students found other libraries and other resources to meet their reference needs. Students also sought assistance from the program administrators during the first semester by requesting that the library hours be extended the week prior to and during midterm and final exam weeks. During the second semester the library hours were automatically extended.

Question 7 related to the extent to which the classroom was free from distractions. During the first semester, students rated this factor as "average" ($\bar{M} = 3.41$), but at the end of the second semester, their rating had dropped to near the "poor" level ($\bar{M} = 2.31$). As students became more comfortable in their learning environment, they became less concerned about the opinions and perceptions of others. As the year progressed the level of private conversations increased to the point that some students were missing key pieces of instruction. Part of this increase in activity may be due to the fact that they did not always have an instructor in their class on the Tulsa campus to control the noise level.

Outcomes as Determined by Grades

Students' outcomes as determined by grades were compiled in order to determine if there was a significant difference in academic achievement between the students on the Tulsa campus and the Oklahoma City campus. In order to make this comparison, the cumulative grade point average (GPA) at the end of the second semester was collected for each student on the Tulsa campus and on the Oklahoma City campus. The differences in the means of the GPA for these two groups were compared by means of analysis of covariance.

Like analysis of variance techniques, analysis of covariance (ANCOVA) allows for the comparisons of the means for two or more groups. However, ANCOVA also allows this comparison to control for another variable that may affect the analysis (Huck & Comier, 1996); this control variable is referred to as the covariate variable (p. 485). This techniques allows the researcher to "hold constant" variables other than the dependent variable upon which the comparisons group may differ (p. 486). "To bring about the desired control, ANCOVA adjusts each group mean on the dependent variable" (p. 486).

Although students had to meet minimum standards for being admitted to the physical therapy program and although

a minimum grade point average of 2.75 was required on all college work and natural science courses attempted, individual differences exist in the academic abilities of the students in the program. In order to control for these differences, the students' natural science grade point average upon entering the program was used as a covariant. The students entering natural science GPA is based on 37-hours of required courses and is one way to evaluate how they perform in science based courses. This GPA was used as a covariant because the prerequisite science courses closely related to the course content in the first two semesters of physical therapy school.

When the GPA scores of the students at the Tulsa campus were compared to those of the students at the Oklahoma City campus by means of ANCOVA, no significant differences were found (see Table 3). Thus, the adjusted mean for the Tulsa students (3.22) and the adjusted mean for the Oklahoma City students (3.27) were statistically the same and indicated that both groups achieved on the same academic level. Since the raw regression coefficient for the covariant and the dependent variable was .47 and since "the absolute value of this r should be at least .20," controlling for the entering individual differences

of the students contributed to the accuracy of the analysis.

Table 3. ANCOVA for Grade Point Average by Campus Location

Source	<u>SS</u>	<u>df</u>	<u>MS</u>	<u>F</u>	<u>p</u>
Covariate	1.366	1	1.366	10.835	.002
Between	.023	1	.023	.179	.674
Within	5.548	44	.126		
Total	6.937	46	.151		

A one-way analysis of variance (ANOVA) was used to investigate the relationship between the student's second semester grade point average (GPA) and learning strategy as determined by the ATLAS instrument and between GPA and being introverted or extroverted as determined by the MBTI. Although the number of students was small, this type of analysis was conducted to explore possible relationships in order to further describe the groups and to uncover any indication of differences that might exist. This type of analysis is suitable for an analysis of covariance (ANCOVA) because data existed on the student's GPA for science at the beginning of the program. However, since the correlation between the students entering science GPA and GPA at the end of the second semester was low ($r = .15$), an ANOVA was used instead of an ANCOVA. For the analysis with ATLAS, the participants were grouped as Engagers (7), Navigators (8), and Problem Solvers (2); for the analysis with the MBTI, the participants were grouped as either

Extraverts (8) or Introverts (9). Both analyses showed that there is no relationship between GPA and either the ATLAS or the introvert/extrovert portion of the MBTI (see Table 4).

Table 4. ANOVA for GPA by Learning Strategy (ATLAS) and by Introvert/Extrovert Group (MBTI)

ATLAS

Source	<u>SS</u>	<u>df</u>	<u>MS</u>	<u>F</u>	<u>p</u>
Between	.394	2	.1973	1.20	.329
Within	2.296	14	.1640		
Total	2.6906	16			

MBTI

Source	<u>SS</u>	<u>df</u>	<u>MS</u>	<u>F</u>	<u>p</u>
Between	.003	1	.0029	.0165	.899
Within	2.688	15	.1792		
Total	2.6906	16			

CHAPTER 5

PATTERNS OF STUDENT LEARNING

Introduction

Through the process of studying this specific group of learners, a number of themes emerge from the data. These themes are a product of the multiple methods of research used including observation, focus groups, interviews, questionnaires, and surveys. Since the researcher is the primary data collector, it is his responsibility to ensure that the themes identified are a true and accurate description of what the data show (Merriam, 1988).

Five major themes were identified as playing major roles in the process of student learning in this case.

1. Group Dynamics
2. Instructor Contributions
3. Utilization of Resources
4. Expectations and Realizations
5. Technology and Learning at a Distance
6. Student Empowerment

Each of these themes describes a piece of the process of student learning in this program. A number of methods were used to help describe these themes including observation, focus groups, interviews, and assessments.

Group Dynamics

Group Dynamics is composed of learner characteristics that describe learner identity, cohesion, and preferences based on personality. "Group dynamics are the forces that influence the interrelationships of members and ultimately affect group outcome" (Cole, 1998, p. 27).

Group Identity

Students on the Tulsa campus considered themselves as being separate from the students on the Oklahoma City campus. They saw themselves as a cohesive group with a single identity and spoke about themselves from that point of reference.

A variety of student behaviors on the Tulsa campus were observed throughout the two semesters being studied that demonstrated group identity that separated the "Tulsa group" from the "Oklahoma City group". The identity of this group of learners began taking form during the 3-day orientation process the week prior to the beginning of the first semester. This orientation process included the students participating in 2 days of activities by videoconference in their main classroom. On the third day, the Tulsa students hosted the main campus students from the department to a catered lunch which allowed them to interact with fellow classmates and faculty for

approximately 3 hours. During this process, students were observed to spend much of their time sitting with and visiting with the group with which they had spent the first 2 days of orientation. During the orientation period the "students on the Tulsa campus" were referred to as such by a number of the speakers during this event including the Dean of the College of Allied Health, the Division Chairperson of Rehabilitation Science, and a number of others. The orientation agenda included items such as administrative introductions, a welcome to new students, college and division guidelines, and presentations by the library, bursar's office, and financial aid office. Comments such as "What about us?" and "Will we have that too?" were made by students on the Tulsa campus when items included only Oklahoma City information, addresses, or available resources. These comments showed that the Tulsa group had clearly formed a group identity as a result of the orientation activities.

The students on the Tulsa campus were included in the college student council and division class structure during the first months of the program and participated by videoconferencing. During this period, the Tulsa students questioned activities and agenda items that included Oklahoma City locations or resources to be housed on the

Oklahoma City campus. One student commented, "You don't expect us to drive from Tulsa to Oklahoma City for this event do you? Can't we just have our own philanthropy committee?" Another student responded to the college student council appropriating funds for an expensive stapler by stating, "Since we can't use that stapler in Tulsa and our money is helping pay for it, I think the Tulsa campus should have a new stapler too."

Students on the Tulsa campus had frequent difficulty identifying their peers on the Oklahoma City campus during class and presentations throughout the semester. All of the students in the whole program met for a second time in Oklahoma City for a faculty/staff versus student volleyball challenge. Students spent much of the afternoon together, but they generally stayed close to members of their campus. When looking at students from the Oklahoma City campus, many Tulsa students were overheard asking, "Who is that?" Following that class activity one student stated, "I see people in Oklahoma City that I don't even recognize. They just don't say anything...Maybe they feel that way about us." While the Tulsa students were unfamiliar with many of the Oklahoma City students, all knew the names of their Tulsa classmates and routinely used these in formal and informal interactions.

In order to understand how well students on the Tulsa campus could identify their classmates on both campuses, the researcher used a picture identification assessment. This assessment took place in April after the students had shared approximately 10 hours of videoconferencing class time each week for 8 months with members of the Oklahoma City group, and with the other members of the Tulsa group. Each student had a mug shot taken during the orientation period, and those 1 1/2" x 1 1/2" mug shots were placed on one of two 8 1/2" x 11" sheets of paper. Each sheet had four columns and six rows with one photograph missing for a total of 47 photographs. Students were asked to identify the student photos by writing the students first name, last name, or both below the corresponding photo. They were asked to identify the picture of themselves as "me".

All 17 Tulsa students participated in the assessment. Each member of the Tulsa group correctly identified the other members of their group 100% of the time. None of the 30 members from the Oklahoma City group was identified 100% of the time. The frequency of identification of members of the Oklahoma City group ranged from 0 to 16. No member of the Tulsa group correctly identified 4 of the 30 Oklahoma City students. Fourteen of the Oklahoma City students were identified five or fewer times by Tulsa students. Students

on the Tulsa campus identified on average only 8 of their 30 Oklahoma City peers (mean = 8.6, median = 8, mode = 8, range = 4-15). Upon hearing these results one student commented,

It makes perfect sense. Since most of the instruction comes from Oklahoma City, the camera is almost always on the instructor. All they ever see is us. When we ask a question, the camera zooms in on us. When they ask a question, we just hear a voice and continue to look at the instructor.

During the focus group sessions, each of the two groups expressed their sense of group identity. One student stated, "I like to tell people that I go to the University of Oklahoma Health Sciences Center, and I always say 'Tulsa'. I like to distinguish that fact." One student responded, "I do too. We need a big flag pole to let people know that we're here." Another student commented, "I see us as totally separate from the Oklahoma City group. I don't feel attached to that group; I feel separate from them. It doesn't bother me at all." Each group tended to refer to themselves as "we", "us", and "Tulsa". They referred to the Oklahoma City group as "them", "they", and the "Oklahoma City group".

Group Cohesion

The students on the Tulsa campus formed a cohesive group that supported student learning and fostered a sense

of belonging and friendship among the members. Students gave much of the credit of their perceived success to the group cohesion that they developed during the first two semesters in the program.

During the second week of the semester students began sharing about themselves with one another and identifying similarities between themselves and others in the group. There were no obvious cliques developing, but some of the students were more reserved in the process of the group development. Realizing that a birthday of one of her classmates was nearing, one of the students organized a student list on the chalkboard that included names and dates of birth. For that first birthday of the semester, students brought a variety of items including cake and cookies to celebrate. This is a tradition that the students continued throughout the first two semesters.

When the occasion arose that a student was going to miss class for a family funeral, a number of the students offered to "take notes" and "go over it later" with the student. This type of student activity occurred on a number of occasions.

During the first two weeks of class, a small group of students organized a "ski day" at a nearby lake and invited all students from Tulsa and Oklahoma City and their

families to attend. More than half of the Tulsa students attended that "ski day" function.

Both focus groups centered much of their discussion on the concept of class unity. Many viewed this class cohesiveness as an invaluable tool to the process of student learning. One student commented,

I don't think I would have made it very far by myself. If I didn't have people to help me out here and there with little things, whether it is getting some work organized, or just talking. A lot of us are away from our family or friends, and it helps to feel like you're not in it by yourself. That's what helped me more than anything did. In Oklahoma City it's not like that. When I go to Oklahoma City, I don't feel like I'm a part of the program.

This introverted student's feelings were shared by all in her group. A student from the extrovert group commented,

I think the biggest thing is the close knit of the group. We didn't have anybody to follow, so we had to depend on each other. It's not like we had seniors here so that we could follow their lead. We had to depend on each other, and that made us closer.

Other members of this focus group agreed with this individual's statement. One student's belief that the groups unity was so valuable commented, "I agree, if we hadn't gotten together like we did that this would have been a failure." Another student stated that he believed that "not having faculty up here is going to make us

cohesive because you have to turn to each other. You can't do this by yourself."

Students believed that the group cohesion was a result of their being more isolated than traditional students while others felt that the group cohesion was due to the quality of the students on the Tulsa campus. This group cohesion was evident throughout the semester. All of the students in the group were friends with everyone else. The students on the Tulsa campus were friends more than classroom acquaintances.

I think that a big part of the closeness is not just because this is a first year program. I think it's the people that make it what it is. I think that contributes as much to the closeness of our group as the distance learning aspect.

The general consensus between both groups was that they didn't believe the Oklahoma City group was as cohesive as they are. Their perceptions were based on what they had heard from classmates on the Oklahoma City campus, what they believed occurred on the other campus, and how they thought they would feel being a student on the other campus.

If I was given the chance to go to Oklahoma City or Tulsa to go to class, I could handle being in Oklahoma City, but because of the smallness of our group I think we have a big advantage.

Another student from the other group stated,

This group in Tulsa has helped me more than the group in Oklahoma City ever could. If I weigh the pro's and con's, the pro's outweigh the con's.

Instructor Contributions

The theme of instructor contributions to the learning process was common during student focus groups, interviews, and assessments. Students made their opinion about instructor contributions that either helped or hindered the process of student learning in this program well known by their actions and comments. Contributions that helped students in the learning process were those that students believed helped or aided in learning. The contributions that hindered learning were not only ones that students perceived as being less valuable, but those that students believed diminished the effectiveness of the teaching-learning transaction.

Helpful Characteristics

A number of class observations demonstrated that students' participation in class was dependent in large part on the instructor. Students' attitude toward a course was also closely related with the instructor of that course. Students appeared to participate in, and have a good attitude toward courses that included a variety of activities beyond lecture format. They appeared to be more

engaged in classes in which some preparation was required before attending class whether it be through reading, writing, or prescribed activities. In one case, students were required to prepare for class through readings that were available on the Internet. In class they were exposed to a variety of teaching methods about the subject. Students were excited about attending this class because they felt prepared for what they were expected to learn and knew that they would be exposed to a variety of examples in class about the subject. In another case, students received their class notes ahead of time, but knew that in class they would hear those same notes being read aloud with pictures to supplement their readings. Student attendance at this class was very low.

The two focus groups made almost an equal number of comments about the effect that faculty had on student learning in the program. Both groups agreed that it facilitated student learning when faculty were prepared, used multiple methods of teaching, showed interest, and were timely with correspondence. One student stated,

I think some instructors are just better at doing this distance education than other instructors. They might know all of this distance technology stuff, they might not do anything different, but it comes across better with some teachers.

Some students believed that instructor characteristics were what make the difference. Students believe that instructors who engage them in learning activities are helpful. One student stated, "I like it when they [faculty] get us to do something." Another added, "I think involving us more in the learning activity would be good. More hands-on active learning," another stated.

Many of the students remarked that they appreciated the effort the instructors in Oklahoma City put into the process. One student stated that she really believed that the faculty "tried to make Tulsa students fit in."

When asked during interviews what instructor characteristics were most helpful in the learning process while in this program, 14 of 17 students responded that the instructor's ability to give and answer questions in a positive manner was helpful. "The ability of the instructor to make you feel like every question is important" was one comment made by a student. Another student believed that her "ability to ask questions freely without feeling like I'm a total idiot" was an instructor characteristic that was beneficial. One student commented that she thought it was helpful when the instructor "questions us before they tell us the answer. That lets us reflect on our previous knowledge." Another stated, "I

like it when we are challenged to think--stretch ourselves--instead of them just telling us the answers."

Certain teaching methods used by faculty were considered to be beneficial to the learning process. A number of the students suggested that involving students in activities and utilizing multiple methods to teach the information was helpful. One student believed that "an instructor who presents a written, verbal, and psychomotor component" to their method was beneficial. Another student stated, "I like it when they [faculty] incorporate all different aspects of learning."

Appropriate and timely communication was another instructor characteristic that students believed was helpful to learning. Students perceived timely communication as being beneficial to the learning process and untimely communication as being a hindrance to student learning. "It helps when our instructors make themselves available through e-mail and the telephone," one student remarked. Another student commented that she believed that "it helps when the instructor responds automatically to e-mail or is willing to set up a videoconference to discuss a problem."

Hindrances to Learning

Students were observed to participate in and attend class less if the instructor used lecture as the primary means of disseminating information. In one course where the lecture information was available to the student before class and the instructor reviewed the same information without much elaboration, attendance to that course by Tulsa students was rarely over half of the class.

Students' negative attitudes toward certain instructor characteristics in the form of frustration were observed in a variety of behaviors. One being frustration for what one student referred to as a "difficult teaching style".

During the first semester students became frustrated when their peers in Oklahoma City received assignments, exams, or articles before they did. There were instances when students in Tulsa would get material back three days after their peers in Oklahoma City. Although attempts were made by the faculty to return papers as soon as possible, students expected to receive their information at the same time that their peers did. One student commented during the first month, "I talked to my friend in Oklahoma City last night, and she said that they [Oklahoma City students] have had the article we need for three days...I don't think that's fair."

Both focus groups discussed issues of faculty characteristics that were less helpful or at times hindered the learning process. One thing that hampered student learning was that some instructors only presented notes that students already had access to during class. One student stated, "I like it when they do more than just read to us. Sometimes I wish that I had just read my e-mail and slept in." Another student stated that faculty need to "decrease the reading and increase the activity." One student proposed that faculty should plan when they give information and require something to be due. "I would like to sit all of the professors down, and we would have a big discussion over when projects are due and when they should be assigned." Another student commented, "It doesn't do a lot of good for them [instructors] to tell you about an assignment when you can't do it until after midterm."

Timeliness was an issue brought up by a number of students. They believed that when instructors failed to be timely that their learning was affected. Unless the course coordinator was located on the Tulsa campus all assignments and tests were sent to Oklahoma City for grading. In one case neither the Tulsa or Oklahoma City students received feedback on their midterm exams until two weeks prior to

the final exam. This did not allow students to identify their errors on the exam and immediately correct them.

I think one thing that can hinder learning is when we take quizzes or assignments and you don't get them back promptly. You have many more due before you find out how you did. If you don't have feedback, then you don't know how to improve or say, "Okay, I did that right".

An extroverted student from the other group felt similarly.

I really wish that we had some sort of procedure in place for getting our papers and tests back quickly. When you take a midterm exam and don't see it or see it right before finals week, it doesn't really help you. If you answer a question on a midterm exam and miss it but don't know it and if you have a comprehensive final coming up, you're probably going to miss that question twice.

Students often repeated comments made in the focus groups during the interviews. Most of the student comments about things that hindered the learning process had to do with levels of communication.

Seven students made specific comments in reference to the instructor "talking above our level". Six students made comments similar to those from the focus groups about instructors "just reading their notes". Students also reinforced the fact that poor instructor timeliness was an instructor characteristic that could hinder the learning process.

Utilization of Resources

Students used a variety of resources to aid them in the learning process. Resources included faculty, peers, libraries, publications, the Internet, laboratory experiences, and clinical experiences.

How and why these students chose the resources for learning they did varied. Learning strategy seemed to play a role in what resources students preferred for learning.

Faculty

Students often used the faculty as a resource for learning whether communicating with an instructor in Oklahoma City or in Tulsa. Regardless of the course students asked questions of an available faculty member when needed. They most frequently relied on the instructor responsible for the course. They used the faculty member on their campus for more generic rather than assignment specific questions, but they routinely asked both. Faculty who taught in a style that students enjoyed tended to be used as a resource most often.

Our professors are right here. We don't have to walk down the hall to find out about office hours. I feel like before I wouldn't have approached a professor quite as easily.

Often when students approached the faculty member on the Tulsa campus about a course that he was unfamiliar with

he would refer them to the primary course instructor. During the beginning of the program it was sometimes necessary to ask the student to call the course instructor from his office so that the student would not have an opportunity to be intimidated by having to call with a question. In one case, three students were studying for a final exam and had a question about a specific problem. The primary instructor for the course was located in Oklahoma City and students debated on whether or not they should try to contact him by telephone. One student commented, "Well, if we were in Oklahoma City we would just walk down to his office and ask him this question." Despite that realization the students continued their debate until the instructor on the Tulsa campus suggested that they, "pick up the phone and call."

Students use of faculty as a resource was made evident by both focus groups. Students frequently suggested that the ability to communicate with a course instructor was a valuable resource for learning. Many students agreed that they appreciated the faculty being accessible by e-mail, telephone, and by videoconferencing.

As previously stated, students generally believed that having notes supplied by the instructor before or after class was a valuable resource. A number of students made

specific references to instructors web sites. One student stated that "professors web sites are the most beneficial resource because they usually post the notes for lecture."

Peers

The act of using peers to support the learning process became evident during the first two weeks of the program.

In the second week of the program, one student stood up and announced,

Okay, this is what I think we should do. It would take too much time to look up every objective for every course prior to midterm exams, so what I propose is that we divide them up and share the answers.

This type of activity was observed throughout the first two semesters. At the end of the first semester one course required that each student evaluate one of two articles. Students identified who was assigned to each group, and with instructor approval, they worked as a collective group. One student did not work in one of these groups due to a prior commitment, but members of the group contacted her later to discuss their findings with her.

Both focus groups commented on the use of peers as a resource for learning. Many comments suggested that the lack of traditional resources such as multiple instructors on-site and a library with adequate collections may be one

reason that peer support as a resource was used so much.

One student commented,

It's kind of like even though we might not have all of the resources and might not have all of the professors, we're still all stuck in the same boat out in the middle of the sea. Whereas the people in Oklahoma City, they're already established. They have people to look up to, people to go to for guidance...and here we are. We all have to intermingle with each other to learn and find out all of the information that we need to know.

Another student believed that "by not having faculty up here that we are going to be cohesive because you have to turn to each other. You can't do this by yourself." Yet another student supported that idea by saying,

I think the smallness of our group made everyone work together as a group instead of 5 or 6 different small groups. I don't know if that happens in Oklahoma City, but it seems like that would happen less if you had a larger group.

One group discussed in depth how students on the Tulsa campus serve as a resource to one another. One student made a comment about how fellow students were helpful at remembering deadlines and another student responded by saying,

That's true, we always remind each other that there are quizzes coming up or whatever, and it's not like there is a big competition going on.

The students' ability to share information was also discussed. One student stated that, "In Tulsa there aren't

any boundaries with sharing information. One person gets the information, and they share it with their classmates."

Six of the students made specific references to using peers as a resource in the learning process. As students started getting to know one another their level of comradery and trust grew. Students would frequently study in groups which supported the use of peers as a resource. One student commented, "People--fellow students are a good resource. It didn't start out that way, but they have been." Another student stated,

Peers are a great resource for learning. We may break up into groups to work on something but we always come back together as one big group to compare and contrast what we learned to make sure that we were correct.

Library and publications

The use of publications and their origin varied from student to student. Some students frequently asked for faculty direction on which texts or journals might contain information needed. The largest resource was the library, but others included the resource room collection and faculty members' private collection.

The library was the resource that appeared to be most frustrating resource available to students. The OUHSC-Tulsa Library lacked the resources that physical therapy

students frequently needed. Often items were available through interlibrary loan, but they would take too long to be received to be useful. When the midterm examination week of the first semester neared, the students quickly protested that the OUHSC-Tulsa Library hours were not adequate and compared them to the Bird Library on the OUHSC-Oklahoma City campus. Students contacted the student services director on their campus, faculty, division chair, and the associate dean regarding this issue. As a result, the week before midterm exams the library hours on the Tulsa campus were extended.

The library and access to needed materials was a topic of discussion of both focus groups. One student commented, "There are very few things in our library that pertain to physical or occupational therapy." The lack of rehabilitation specific resources and the time required to attain them were the students primary concerns.

One thing that I was frustrated about was looking up resources downstairs. I would go to the Bird Library [in Oklahoma City] and anything you can get on the computer, anything you look up is right there. Here it is a waiting process. Maybe it's only 2 or 3 days if your lucky, but sometimes it can be longer, so if you want to get it done right then, it can be rather frustrating.

A student from the other focus group felt the same way.

The first semester was hard because I needed all of the articles and had to wait 3 weeks for our

library to get them in, but it was too late. I don't even go down there anymore because it's such a pain.

These comments provided further evidence of the students' frustration with the Tulsa campus library. All of the students on this campus made a comment about how the OUHSC-Tulsa was not a helpful resource. However, using other libraries, the Internet, books from an instructor's personal collection, and their required text were all mentioned as being a valuable resource.

Internet access

Students relied on Internet and World Wide Web connections to access their e-mail, course lecture material, links to related sites, and research. Students frequently used the computers in the resource room and library to work on assignments, download information, and communicate with others.

Most of the students, especially Navigators, identified computers and the Internet as a resource that helped in the learning process. One Navigator commented, "I like that we can access our notes on the Internet or e-mail so that I can pay more attention during class [and less on writing notes]."

Twelve students made a specific reference to the value of the Internet, World Wide Web, or e-mail during the

interview process. Each believed that these were valuable resources in the learning process.

Laboratory and clinical experiences

Laboratory and clinical experiences appeared to be enjoyable experiences for the students. They frequently commented that they wished that they had more time for practical experiences whether through prepared laboratory or clinical experiences. They believed that having the opportunity to use and process the knowledge that they had gained would be a valuable experience. Students had six half-day experiences in the clinic during the first two semesters. After each clinical visit students were excited and eager to share their experiences with the faculty and their peers.

Physical therapy is an applied profession. Success with patients depends on being able to apply theoretical knowledge in a meaningful way. The students are heavily aware of the need to be able to apply classroom knowledge in the real world.

Both focus groups discussed the benefit of having laboratory and clinical experiences as a resource for learning. Students enjoyed their laboratory experiences, but they had some concern that not having the course coordinator teaching their lab could put them at a learning

disadvantage. Students experienced some confusion during exams when questions reflected something that was taught during the Oklahoma City lab session, but not during the Tulsa session. One student stated, "In two classes they [Oklahoma City] covered a topic in lab that we didn't, and it was a test question. People here, the majority guessed and didn't get the right answer." One student remarked that "one thing I would change is being able to talk to the professors [coordinators] during labs.

Since they had only had six half-day experiences in the clinic they spent a lot of time speculating about the value of future clinics.

I hope that they get us into the clinics a lot. The more time I spend in the clinic, the happier I will be because that's where we'll put our knowledge to use.

Another student commented,

I'm going to learn more in four weeks this summer [in the clinic] than I have learned all semester because I learn better through "hands on".

Students seemed to believe that practical experience would tie in much of the information that they had spent two semesters learning, but were unable to put into much real practice. One student supported this assessment by saying,

Going through all of this and having it all in our head and finally getting to use it [in the

clinic] for 4 weeks will give us a big jump. We are gradually getting smarter.

These comments supported how students viewed the laboratory and clinical experiences as valuable learning experiences.

Self

Students also used their self-directed learning abilities as a resource for learning. Self-directed learning is the process of self-diagnosing needs, establishing goals, identifying resources for learning, implementing learning strategies, and evaluating the results (Candy, 1991).

Many students were required to learn to use computer technology, libraries, and research materials on their own. This was most apparent during the first semester when students were required to learn how to use computers for more than word processors and had to prepare research projects for class presentations. One student from the introvert focus group who is an Engager stated,

I have learned more in the first month of school about computers. At first that was hard...I feel like I spent my first month on computers...now I know enough to get by and I think that's good.

Another student was discussing how there is often not enough time at the end of a lecture to ask the instructor questions before the system shuts down and

stated that she has to "go look up the answer, but that facilitates the learning process."

The Tulsa situation is forcing the learners to be more self-directed. This is an important characteristic for future success in the field. The students' reliance on their self-directedness as a learning resource was evident during both focus group sessions. One student commented,

I think one thing that helps me is that because we don't have as many instructors here we have had to look a lot of things up by ourselves. I think that in the long run that helps me more than just going to instructors and asking questions.

A student from the other focus group made a similar comment.

Since we don't have every professor who teaches our class here on campus, we can't just automatically go to the professor for clarity. We're more on our own and we problem solve more because we have to.

A few students made specific comments about how their computer skills have improved since beginning the program.

One student commented,

I learned more in the first month of school about computers. At first it was hard. I feel like I spent my first month on computers every day. I didn't like that, but now I know enough to get by and I think that's good.

Some of the students came into the program with self-directed learning skills while others are just

developing them. In both cases students become self-directed in their learning in the absence of needed resources.

Some of the students commented on how their experience had become a valuable resource. One student commented that "I have really had to learn to do a lot on my own." Another student commented that "having learned how to actually read a journal article has been helpful." Two other students commented that they had been forced to learn how to use computers because of how much they are relied on in this program. Another student commented that she had to teach herself how to "really use a library. Now I can go to the library and computer to pull up references and reading material."

Expectations and Realizations

Students frequently commented on what their expectations were upon entering the program and compared those expectations with their current understanding. Three topics of discussion included expectations of the program, the educational process, and the profession. In each case their previous expectations were challenged and replaced with a new level of understanding.

The Program

Many students had expectations that were not realized when they applied for admission into the physical therapy program at the University of Oklahoma. In each case however, the students were pleased with the outcome after two semesters of study. One student expected to be accepted and attend classes on the Oklahoma City campus.

I cried when I found out that I was going to be in Tulsa. I was mad at God for the longest time. But, once I got here...now if I was in Oklahoma City, it would be totally different.

Another student was accepted into the program on the Tulsa campus without realizing that it would be provided in part by distance.

When I got my application, I hadn't even heard about the Tulsa program. They didn't tell me it was distance or anything. The first day I was thinking "this is kind of strange". I really have enjoyed the program.

None of the students on the Tulsa campus implied that they regret being on the Tulsa campus or wished they had been accepted on the Oklahoma City campus. One student stated, "I've heard people in the beginning say they wished they were in Oklahoma City, but now they say they wouldn't go to Oklahoma City."

The Educational Process

Students frequently reported that how they viewed the educational process had changed since they had been accepted into the program. Subjects included study habits, fears of participating in a distance education format, and expectations regarding faculty support. One student commented on her expectations of participating by distance.

All of my other classes but one have been traditional. I dreaded this program because of that class because the teacher in that class wasn't very successful using the technology. I waited so long to get into the program and I really wanted to get to know the professors, but now it doesn't bother me.

Students from both focus groups commented that their expectations of faculty access were not realized, but that there were no real negative affects as a result. Students had expected more faculty representation on the Tulsa campus and believed that the opportunity for face-to-face communication would be more frequent. One student commented,

It was stated in the beginning that lectures would come from both sites. They give more in Oklahoma City then here...Now you're talking about 90% from Oklahoma City.

A student from the other focus group supported that statement by commenting, "We did come into this program

with the understanding that there would be more interaction with the faculty."

Students rarely had face-to-face interaction with their instructors. Many of the students only had two or three opportunities during the two-semester period to discuss issues with their instructors. Another student commented that they expected to see the instructor of their courses on a regular basis.

I expected to see the professor at least once every two weeks, but some have only come once or never. I've never really met any of them; I mean really sat down and had a conversation with any of them [from the Oklahoma City campus].

Most of the students realized that the level of on-site access they have to faculty might not be as important as they had once thought. Many now feel that as long as faculty are responsive to their needs by e-mail, telephone, or teleconference that their needs can be met.

Other students believed that the rigor of physical therapy school would preclude them from having "a life outside of physical therapy school". One student commented,

I heard all of these horror stories about how you won't have any free time, but I haven't ever experienced having no free time. They [the program] have done a good thing by thinning the program out over three years.

Other students commented on the reports and stories they had heard from senior students in the bachelors program. Most commented that sharing those experiences was not helpful because "their program was completely different from ours." One reason that this group of students may not have had an experience similar to what they heard from senior students is that the design of their program is much different. Their curriculum is spread out over an eight-semester period while their predecessors had to complete the bachelor's curriculum in five semesters.

The Profession

Many students had a much different expectation of what the profession of physical therapy was about prior to entering the program. During the focus groups, students were asked if, prior to entering the program, they could accurately explain to their families about the profession of physical therapy. None of the students reported that they could have or did have a true understanding of what their chosen profession was or believed that they could communicate their understanding to others.

I thought that physical therapists always got this list from the doctor and did what they requested. I'm more excited about the fact that it's going to be more of a decision-making process on our part.

Another student commented,

I thought that when I did my observation that it seemed like the physician had more power. Now I don't think that physical therapists get the respect that I think they deserve from people in other healthcare professions.

Many other comments were made about areas of physical therapy practice that they did not realize existed until they were in the program. None of the students' comments revealed any negative realizations about the profession of physical therapy.

Students had clearly developed a vision of what the field of physical therapy was about. Once they started relating to the profession they began to develop a professional identity. As a result, they developed a more mature view of the field of physical therapy.

Technology and Learning at a Distance

Technology had an affect on student learning during the first two semesters in a number of ways. Technology aided in the learning process through videoconferencing, computer applications, and other mediums. Learning was also affected by the quality of videoconferencing transmissions.

The Use of Technology

At the beginning of the program students appeared hesitant about using the technology in the classroom. They frequently forgot to activate their student microphone

before speaking in class and tended to avoid being on camera. This quickly changed once they became familiar with the system and how they could use it to their benefit.

Once students began understanding how the technology worked, they frequently made comments and suggestions about how their needs could best be served. Suggestions were usually to change the lighting, sound, or video view and quality. Students preferred indirect lighting during Power Point presentations and videos. Power Point presentations that were simple in design and had contrasting color such as black and white were preferred. At times there was no instructor present on the Tulsa campus during class. As a result, a few of the students learned how to control the equipment during the year, but they were not always successful in operating each of the controller functions.

The faculty and staff did not realize how to correct a certain sound problem on the Tulsa campus until after the second semester. Students frequently commented throughout the semester about how difficult it was to hear in the back of the classroom comments made by those in front. The problem was that the in-room speakers were frequently turned down too low because if they were set too high feedback distorted in-room sound. This problem was solved by making certain that the in-room speakers were set

correctly so that students in the back of the class could hear.

Students made a number of comments about the technology used in the program during focus group sessions. One student commented that he believed "Tulsa students know a lot more about this technology than we think we do...that may put us ahead someday." Another student commented that "the technology still needs a lot of tweaking, but the college listened to our needs. Other students made comments about how faculty might use technology in a different way to maximize the effect on learning. One student commented, "It would help if teachers knew what type of Power Point to use. Not yellow! Black and white without any fancy pictures works best." Students know that they want information presented in a way that is clear and simple. Although Power Point can look fancy it is best when it is black on white without special designs.

Technology's Effect on the Classroom

The students main concerns about the use of technology during the learning process were that they be able to see and hear the material being presented. Since the course instructor was usually at the main site, students would generally come to class just on time or slightly late. Many of the students would spend a few minutes getting

settled before they would attend to what was being presented from the other campus. Often faculty on the Tulsa campus would comment about the noise level or lack of attention being paid to the course instructor.

Students would generally complain out loud if they could not see something clearly or if the sound was distorted. They also made complaints when a student in Oklahoma City would ask or respond to a question without activating their student microphone. Often the instructor would answer the question, but the Tulsa students would ask, "What was the question?"

Some students commented on the quality of sound in the classroom. "When we ask questions up front, people in the back of the room can't hear us, but we can't talk too loudly or we'll blow Oklahoma City out of the water," one student stated. Another student commented, "I think we need to add speakers to the back of the room so that you can hear the people up front when they ask a question."

Another suggestion made during the focus group was that "faculty [should] repeat questions and answers. I can be sitting three rows behind someone and not hear them." The students reported that one instructor did consistently repeat the question and that it was a very affective tool.

Student Empowerment

When students are required to be self-directed in a learning situation that is unfamiliar to them and lack the needed resources they take charge of the learning and know what needs to be done in order for their needs to be met. These students are organizing learning in a way that works for them. This action includes identifying new resources for learning and modifying how they approach a learning task. This student empowerment through action shows that the students are functioning like adult learners. A traditional suggestion would be to let the students identify their needs and let the educators establish a plan in which student needs could be met. In this case students identified their needs and organized their resources so that they could get what they lacked.

Students identified the lack of resources in the on-campus library as something that hindered learning. However, students identified other resources to meet their library needs including the Internet, accessing faculty book collections, and accessing other libraries. This is an example of students figuring out what needs to be done in order for their needs to be met.

This group of students frequently had educationally relevant conversations during class that would not be

tolerated in a traditional learning environment. One topic of much discussion between members of both groups had to do with the amount of inappropriate talking during class.

Students on the Tulsa campus believed that they were talking too much instead of listening to the instructor.

One student commented,

First of all, you can't hear the first part of a conversation that an instructor has because we don't settle down for at least 10 minutes. It's frustrating because we know that we need the information.

Another student commented, "We don't really have anyone here to make us focus. Personally I may miss 20% of the information." Another student suggested,

We don't have that fear factor. Although you would never be rude to that instructor if they were sitting in front of you, you know it's different and you don't even think about it. You just talk.

Another student from the other focus group stated, "We do have a noise problem up here. Let me just say that I'm guilty of it, but it is just too easy when you know they [Oklahoma City] can't hear you." To that another student responded by saying, "I'm a part of the problem [talking], but I don't know how to fix it." Students remarked that they believed "talking in class" was considered inappropriate but realized that they continued to do it anyway. This action was not always obvious to instructors

and students on the Oklahoma City campus so it was not identified as being disruptive to the learning environment. This action by the students allowed them to incorporate a human element into their learning environment. By students' actions this interaction was deemed necessary and valuable because they continued to do it in spite of the fact that they felt what they were doing was wrong.

Instructors providing students with course notes was considered helpful to the learning process by students. However they believed that these notes should be a supplement to the teaching-learning transaction and not an independent form of disseminating information. In instances where instructors repeated course notes in a lecture without expanding ideas or concepts, or without engaging the students in a meaningful activity they often chose not to attend that lecture. They realized that they could be participating in other activities to help them learn the material more effectively than listening to a repeat of their notes. This student action demonstrated that students did not value lectures that merely repeated what they already had in readings or course notes. Although students on this campus approached learning in this way there was no significant difference in their outcomes as determined by their grades compared to the

Oklahoma City students. This finding shows that the students on this campus are truly adult learners who will take action to see that their needs are met and meet them without compromising their learning. This process is a transformative experience that may prove to be beneficial as the students will be required to be self-directed, independent learners once they graduate from the professional program.

CHAPTER VI

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

Summary

Physical therapy education in the United States is a process that has been evolving during most of the 20th century. Since the University of Oklahoma began offering a professional Master of Physical Therapy degree in a 3+3 year format at two campuses, a specific challenge becomes one of understanding students learning in this type of program. As the trend in profession physical therapy education changes to offer a post-baccalaureate degree and the way that education is provided changes, a number of issues must be considered if the program is to be successful.

Specifically, one must recognize how principles of adult learning and distance education will affect student learning at the distant site of this program. Adult education can be viewed as a number of things, but in this context it is being viewed as the process by which students learn. Distance education describes any learning situation in which the teacher and learner are in differing locations. "It appears that to teach people, educators must understand them, which is most easily accomplished by

trying to see the world and the student from the students viewpoint" (Verduin & Clark, 1991, p. 144).

Therefore, the purpose of this study was to describe the process of student learning at a distant site in a dual-campus professional physical therapy program using distance education. This was accomplished in two ways. First, the development of University of Oklahoma Health Sciences Center's professional physical therapy program's "distant site" and the effect that implementation of distance education has on student outcomes and attitudes at this site was described. Second, the study investigated how differences in personality type, learning preferences, and perceptions affected those outcomes and attitudes. A variety of methods were used. First, students' outcomes as determined by grades were measured. Second, students' attitudes toward televised courses in this learning situation were assessed using a tool developed by Paul Biner (1993) that was modified to meet the needs of this study. Third, an assessment of students' tendencies to be extroverted or introverted as determined by the Myers-Briggs Type Indicator (MBTI) was compared to students' attitudes, outcomes, and preferences. Forth, the effect of learning preferences was determined by the Assessing The Learning Strategies of Adults (ATLAS) instrument (Conti &

Kolody, 1999) and related to students' outcomes and attitudes. Fifth, student perceptions and actions were gathered using a variety of techniques including observation, interviews, and focus groups.

The findings of this study highlighted a number of things concerning who these students are and how they learn. Students on the Tulsa campus had an average age of 25 and tended to be white. There were 12 female students and five male students on the Tulsa campus. All students had completed at least 90 hours of prerequisite coursework before being accepted into the program.

The students tendency to be introverted or extroverted as determined by the MBTI was almost equal with nine students identified as being extroverted and the remaining eight as being introverted. Most students tended to fall in line with the description of these categories in both observation during the program and statements during focus groups. Extroverted students tended to be more outgoing, dependant on input from others, and quicker at adopting distance technology. As a group, the students identified as being introverted seemed to be reserved, self-reliant on gathering needed information, and less engaging with distance technology.

Learning strategies as determined by ATLAS identified that two of the three categories were dominant in this group of learners. Eight students were identified as Navigators, seven as Engagers, and only two as Problem Solvers. Distinct profiles were created for the Navigators and Engagers based on the findings showing Navigators to expect "reading" and "seeing" before doing while Engagers preferred "activity" and "hands-on" learning.

Students' attitude toward videoconferencing revealed that a variety of factors contribute to their attitude about this program. Instructor characteristics, technology, and course management and coordination can all contribute to students' perceptions about videoconferencing.

During the educational process, students at the distant site in Tulsa identified themselves as a separate group, perceived themselves as being independent of the "one class" concept, and relied heavily on one another for support. They demonstrated that just being involved in the same courses does not ensure that student support and cohesion will occur across distances. The cohesiveness of the group was expressed in a variety of ways with the most substantial being in how they described their feelings about the value of group support.

A variety of instructor contributions to student learning were identified. Students identified those instructor contributions that helped and hindered the learning process. Instructor contributions that students believed helped the learning process were timely and appropriate communication, use of a variety of teaching styles, preparing students for class and actively engaging them in some meaningful activity, and responding well to questions. Contributions by instructors that students believed hindered the learning process included "talking over the students heads", "reading from the notes", and untimely responses to questions and providing feedback. While the findings were not critical of the instructors in this program, they reflect the students' opinions and perceptions about how certain characteristics affect the process of learning.

The students' utilized a number of resources to aid them in the learning process during the first two semesters of this program. These included peers, faculty, themselves, computer technology, laboratory and clinical experiences, and books and journals. A general opinion about the value of available resources was readily identified and reasons for those opinions were provided. Students perceived their peers as being a valuable resource

for learning, they were part of a cohesive support structure during the learning process. Faculty from both campuses were considered as resources for learning and were accessed in a number of ways including face-to-face interaction, and telephone, computer, and OneNet communication. Students served as their own learning resource in the absence of needed resources through self-directed learning. Computers and the Internet were technologies that students believed were supportive and necessary resources for learning in this program. They viewed laboratory and clinical experiences as a meaningful opportunity to put their knowledge into practice with others. The Tulsa campus library was a resource that students perceived as lacking the resources needed to support a professional physical therapy program.

Students had a number of expectations of the program, the profession, and the educational process when they began this endeavor. Many of those expectations were challenged or not realized, and as a result their opinions about how they viewed these things changed. After two semesters in this program, their vision of professional school, how it would work, and how they would learn in that setting changed in many instances.

How students viewed technology as an agent for learning was also challenged during this period. At the beginning of the program students had to participate in an educational environment that was foreign to many of them. As time progressed, so did their willingness to engage technology in the learning environment. As a result many learned a great deal about technology and how it can best be used to meet a learners needs.

Research Questions Answered

1. What are the demographic characteristics of the students in the program?

Students at this site of the program are traditional in terms of age, gender, and sex for a program that requires 90 hours of prerequisite coursework. But, they are non-traditional in the sense that they choose to enter a professional program that has highly competitive and rigorous admissions standards.

The distance education literature supports the idea that these students are older more mature learners who chose to participate in distance learning because they knew that they could learn in that setting. In this case the students wanted to be accepted, some had applied three times before they were accepted. They didn't care about

the format or structure of the program--they just wanted in.

2. What behaviors can be observed that facilitate or hinder the learning process?

Behaviors are "the actions or reactions of individuals under specific circumstances" (Thomas, 1985). In this case a variety of actions and reactions that facilitated or hindered the learning process were observed by the researcher and discussed by the students.

- A. Students' perceptions of what teacher actions facilitated or hindered the learning process.
- B. Students' use and perceptions of peer support.
- C. Students' abilities to become self-directed in the absence of needed resources.
- D. Students' participation in actions that they know are not socially acceptable (e.g., talking during class) but participate in anyway. The students' see this behavior as a problem, but is it a coping mechanism.

3. What is the profile of the students at the distant site in relationship to their personality type as measured by the extrovert/introvert component of the MBTI?

A profile is a "summary, graph, or table presenting a subject's most notable characteristics" (Thomas, 1985). In this case the profile is simple used to give the researcher

and reader a "heads up" that there are differences in students' personalities that can have an effect on performance and expectations in the classroom.

The MBTI was not used as it was originally intended. The introvert and extrovert components were used in order to inform the researcher and reader about these students' "attitudes or orientations of energy" (Myers, et al., 1998, p. 6). Since attitudes are difficult to observe this tool is one way of giving the researcher insight that could be valuable to the teacher and the learner. For the teacher, information about a student's orientations of energy can help him understand why some student behaviors are as they are. They should also realize that in planning the learning event they probably used their personality preferences as a basis for development (Shepard & Jensen, 1997). For the learner the benefits can be similar. In both cases the individual comes to realize that not everyone has the same orientation of energy or attitude. This is important because it reduces the expectation that everyone should learn the same way under similar circumstances.

Can a student profile based on the MBTI using the introvert/extrovert component be created with this group of students? The answer is most definitely "yes". The

profile characteristics that distinguish between the students identified as being introverted vs. extroverted are those that describe the differences between the two.

4. What perceived differences exist in the approach to learning of students identified as being introverted and extroverted?

Students identified as being introverted tend to be quieter, less engaging with the technology and others during class, and rely less on outside resources for learning than the extroverted students. Students identified as being extroverted tended to be more outspoken, more engaging with technology and others during class, and rely on outside resources than their introverted peers.

5. What is the profile of the students at the distant site in relationship to their learning strategies as measured by ATLAS?

The value of ATLAS in this situation is similar to that offered by the MBTI. Understanding that students have preferred strategies for learning. How they utilize resources and approach learning varies and can be of benefit to both the teacher and the student.

The benefits are similar to the MBTI in that teachers are able to recognize that not all learners' approach learning in the same manner and that certain teaching approaches may be more beneficial to the learner. Again,

teachers often structure courses in a way that would best fit their learning style and it is important that they realize that this occurs (Shepard & Jensen, 1997). For the learner, this knowledge helps them to understand how learning strategies have an effect on the process of learning. This will also help them understand that they may learn in ways different from their peers.

Can a profile of students learning strategies be developed as measured by ATLAS? The answer to this question is "yes" as long as there are enough students from each group represented to create a profile. Each of the three ATLAS categories was represented in this student population. However, the Engagers and Navigators were predominant. Only two Problem Solvers were identified. There were many similarities between the groups in terms of preferences during the learning process, but distinct differences were also noted. Those differences are used as a basis for the profile reported for the Engagers and Navigators. Since there were only two Problem Solvers represented and few common characteristics were found between the two a profile was not created for this group.

6. What differences exist between learning strategy groups in their expressed approaches to learning?

Engagers are students who prefer to learn through action. Using "hands-on" or "activity" based learning is most meaningful to this group of learners. Active questioning is one form of learning that is an effective with this group. Engagers appreciate teacher-learner communication that is direct, respectful, and appropriate to their level of understanding.

Navigators are learners who plan a learning event prior to engaging in activity. These students prefer to "read" about a topic and "see" it before "doing". They prefer to ask questions, but only when they know that they will receive a positive response from the instructor. This group of learners value the Internet and e-mail as a resources in their planning for an educational event. Navigators avoid participating in questioning when they believe that the instructor assumes they should already know information.

7. What are the distant site students' attitudes toward instructor characteristics, technological characteristics, and course management and coordination?

Students at the distant site of this program identified characteristics that they perceived to be both helpful and a hindrance to learning. They demonstrated

their attitudes towards those subjects in focus groups, interviews, and on a questionnaire. The questionnaire alone did not provide any new information but supported findings from the focus groups and interviews.

There are instructor characteristics that were helpful to student learning. Active questioning by both students and the instructor where responses are considered to be positive in nature was helpful. Timely feedback to questions, assignments, and tests was also considered helpful by students. The students considered the opposite of these instances a hindrance to learning.

Students' attitude toward the technology used in this program changed as the program developed. They readily identified videoconferencing technology that they felt was both helpful and a hindrance to student learning. Most of the issues in this area pertained to audio and video quality, as well as the instructor's ability to effectively use the equipment in teaching. Other technology such as computers and access to e-mail and the Internet were considered very beneficial to learning.

From the students' perspective they believed that the program was planned appropriately, but do acknowledge that some changes took place during the first two semesters and

that more changes are likely. Students do believe that they should play some roll in future program planning.

8. How do students' outcomes as determined by grades differ between the main campus and the distant site?

Students' outcomes as determined by grades do not differ between the main campus and the distant site. Although the environment and available resources were different learning outcomes as determined by grades were not.

Conclusions and Recommendations

The conclusions of this study are formed as a result of the findings from the data. Conclusions are specific to this case and are not generalizable to other situations due to the nature of the research design. Although these conclusions are not generalizable, they may be transferable (Guba, 1981) to certain situations in the fields of education, adult education, physical therapy education, distance education, and others. Therefore, the recommendations and other possible actions are included to offer suggestions to those fields. A distinction is not made among whom these findings may be transferable because in certain circumstances application may vary.

Six themes related to student learning were identified in the findings. A common thread that binds those themes

together is that the students developed as adult learners through the learning process. They transitioned from being students who depended heavily on teacher-directed learning to ones who preferred student-centered learning and empowered themselves to take charge of their learning. They recognized that human interaction and support were needed in order for them to be successful in this program. They also identified the instructor contributions that either helped or hindered their learning and used that understanding in the learning process. Given that these students were on a satellite campus with fewer resources than their peers, they became self-directed and identified alternate resources to aid them in the learning process. These students entered the program with certain expectations about the profession, the program, and the educational process, but they came to realize that their level of understanding changed as a result of their educational experiences. Although distance education was originally a foreign concept to most of the students in the program, they took charge of their learning by organizing their resources to meet their needs. As a result of these students developing as adult learners, they made certain that their academic performance was equal to their peers on the main campus.

Thus, distance learning in this type of program can be successful when students are given the opportunity.

Students will function as adult learners who take charge of their learning and make certain that their needs are met.

Within this broad setting, the following conclusions can be made.

Student behavior is different in the distance classroom than it is in the traditional classroom.

Students' behavior in the distant classroom is different than that of the site where the instructor is located. Attending class without an instructor physically in the classroom is not typical of the traditional setting. Increased interaction and opportunity for distraction occur at the distant site. Although students may believe that this behavior is disruptive, they either continue in it or do not know how to curtail it.

It can be said that students develop appropriate strategies for dealing with the distance education component by talking with their peers about relevant topics during class. In this case students on the Tulsa campus frequently engaged one another in conversation about issues discussed in class rather than using their microphone to allow the instructor or students on the Oklahoma City campus to hear their comments. This behavior was not

expected and may prove to be a valuable part of the learning experience. This may have been the students way of adding a more "human element" to the learning situation. These discussions may add to the learning experience by affording students the opportunity to engage in what they perceive as being a meaningful dialog about a subject that can help increase their level of understanding. Although this interaction among the students can become disruptive to some, most students participated in the disruption just as much as their peers.

Establishing a distance education program requires an extensive commitment and an informed staff in order to be successful.

Expanding a program to include distance sites requires a number of resources including financial support, physical space, technical support, and faculty support. Those in charge of the programs should make certain that they identified funding for appropriate equipment and can afford any technical support or technical updates that may be required. They must also make certain that their physical space can accommodate any expected future growth.

Although students' attitudes toward videoconferencing are affected by the quality of programming, their outcomes as determined by grades may not be. Students' build and use the available resources in order to make learning

effective for them. They, at times, become empowered and advocate for themselves and their identified needs. On other occasions, they may become more self-directed in a learning experience and identify new ways to meet goals. Students in this program used all the resources available regardless of the degree of availability and were able to identify which of those resources were most beneficial to learning.

It would be appropriate for programs to identify students' needs through formative evaluations in order to identify exactly what students perceive their needs to be, so that those needs can be addressed. It would also be beneficial to identify what resources students perceive as being the most and the least beneficial so that energies can be directed in the appropriate direction.

Distance education programs such as the one at the University of Oklahoma have the potential to empower students. When creating such a program, it is imperative that the organization realizes that social, political, and economic forces are present in higher education, and the effect that these forces have on the educational process. In this process, the role of educator is key. This is not in terms of action but is achieved by listening to the learners in order to help them establish a program that

meets their needs. Once the learners' needs and goals have been identified, the learner can be assessed, a plan can be implemented, and outcomes can be assessed. Administrators and faculty in programs that want to expand their distance education offerings should make themselves aware of the commitment required in order for the endeavor to be successful.

Demographic characteristics that have been applied to distance learners in the past are not generalizable to specialty programs such as the physical therapy program at the University of Oklahoma.

A number of studies have supported the idea that students who engage in distance learning are different from those who do not (Gibson, 1998; Verduin & Clark, 1991). However, in those situations students made a choice knowing that the learning environment would be different. In this case, many of the students did not realize the extent to which they would be separated from the instructors of their courses. A number of the students were so excited about the fact that they were accepted into physical therapy school that it did not matter that the learning environment was different. The nature of a physical therapy educational program and the application process attracts students interested in a professional program. Thus, traditional adult learners are not attracted to the

program. This type of program attracts learners who will be satisfied to some extent that they were accepted into the program.

When relating findings from one study to another it is important to understand the context in which the findings occurred. In this case it would have been inappropriate to assume that the learners on this campus were older, more mature, field independent, or more self-directing than their counterparts as has been noted in other studies.

Developing a student profile related to personality type by using the extrovert and introvert component of the MBTI can be a valuable tool for both students and faculty.

Identifying students' personality type and associating that with a student profile can be of benefit to the student as well as the faculty. "Since beliefs, attitudes, needs, and values are such important determiners of perceptions, perhaps educators should seek to help adult students know what beliefs, attitudes, values, and needs are important to these students and have the students consider them fully and in relation to one another" (Verduin & Clark, 1991, p. 144).

For students this process helps them see themselves in a different way. This experience can help them understand the differences between learners and help them better

understand their behavioral characteristics that make learners both unique and yet similar.

This process offers a similar benefit to program faculty. Identifying students' personality type and understanding how these types affect students and student learning can give the instructor insight into why they do what they do. Realizing that there are many personality types, certain components of the type can be used for purposes other than those intended by the assessment. Using the introvert and extrovert section of the MBTI can be useful in this way.

Learners identified as introverts are quieter, less engaging, and rely less on outside resources. Realizing this can help the instructor understand that these students are not disinterested in the learning process or lazy but that they rely more on themselves. They approach learning from a more independent rather than dependent position.

The learners identified as extroverts are generally more talkative, more engaging with others and technology, and rely more on resources during the learning process. Knowing this can help the instructor understand that these students require interaction, direction, and resources in order to be comfortable with learning. These students also

have a more positive attitude about the learning process when these conditions are met.

Students in this study exhibited a mix of field dependent and field independent learners. These learners are easily identified based on the behavior they exhibit as a result of their cognitive processing. Some students ask very few questions and tend to spend time alone to accomplish a task while others rely on group interaction and instructor reinforcement to accomplish the same task. The learning outcomes may be equal in each situation, but the process used in attaining those outcomes can be very different. The instructor's knowledge and use of this process can make the teaching-learning transaction more pleasant and effective for both the teacher and the learner.

One example of how knowing a student's tendency to be introverted or extroverted could be used in the following way. Although a student who is identified as an introvert may learn well independently and ask other students and faculty infrequently for information, there are times when a student needs to be able to be more vocal and share information with others. Physical therapists are frequently required to work as a member of a team. If an instructor realizes that an introverted student has

difficulty engaging others or participating in groups, she may set up a learning situation so that the student is challenged to participate in a team activity. This will prepare the student for his/her future role as a team member.

Developing a student profile related to learning strategies as described by ATLAS can be a valuable tool for both students and faculty.

Student profiles related to learning strategies can be developed through the use of ATLAS and interviews. Identifying students' learning strategies can be an effective tool for both students and faculty. For students, understanding how they learn may be of benefit in that it allows them the opportunity to build on their identified learning strategy. For instructors, understanding how students use resources in order to make learning meaningful can be helpful so that students' learning strategies can be highlighted as a resource for teaching. Identifying these groups of learners may be helpful in preparing learning activities and experiences.

Students identified as Navigators prefer "reading" and "seeing" first in a learning activity followed by "activity". They prefer open-ended questioning during the learning process and are most comfortable when instructors respond to questions in a positive manner and do not expect

that students already know information. Instructors can contribute to the learning process of a Navigator by offering readings ahead of class time, by responding to student questions in a positive manner, and avoid "talking over the students' heads".

Engagers are students who enjoy being engaged in a learning task through "hands-on" or "activity". They too enjoy using questioning to facilitate the learning process. This group uses a variety of resources to help them in the learning process, but they believe that computers and computer technology are most valuable. Realizing that this group relies on and is aided by engaging in activity, questioning and using technology can be beneficial to the student and the instructor. Specifically, the instructor can build on this learning strategy by planning activities that engage these students or by leaving the activity open and letting the learner choose the action to be taken. These students also perceive that positive responses to questions by instructors aid them in the learning process.

It may be important to track students' learning strategies that they do not tend to use in physical therapy school, but that they may need in school or practice. It is important that physical therapists use a variety of learning strategies in practice. In this program, there

were only two Problem Solvers. Problem solving is a skill that is required in the field of physical therapy. Yet, this is not a learning strategy that students are using. It is important to realize that students are not using problem solving as a learning strategy and to teach students' problem solving skills to prepare them for their professional role. This has implications for adult teaching, adult learning, and physical therapy education.

A physical therapy program must have adequate library resources available to meet students needs.

The students in this study believed that the library on their campus was the least beneficial resource for learning in the program due to the lack of appropriate resources in its collection. They also felt that it should have been more helpful. Libraries should have an appropriate collection in order to be perceived as being beneficial by students.

Performing a needs analysis prior to expanding a program may be beneficial. Asking former students, faculty, and other stakeholders what library resources they perceive as being beneficial may be a good place to begin. If library resources are not available, the supplementing of students' resources with a departmental collection of texts, as this program did, may be useful.

In the absence of adequate or appropriate library resources, students will seek out needed information from other sources. They may identify libraries that meet their needs or turn to the virtual library found on the Internet.

Students at the distant site will form a distinct group and identify that they use the group as a resource in the learning process.

This group of students formed a cohesive, "separate" group and identified with that group rather than perceiving themselves as part of the whole class group. Students at the distant site became a cohesive group out of necessity. The student's perceived and realized lack of resources created a dependence on one another for support and survival in the program.

Although students spent a large amount of time in the program connected by videoconferencing, they did not necessarily recognize their classmates on the main campus. If students are expected to be a more interactive and cohesive single group rather than two groups, then getting students to interact with students on the opposite campus must take place in the very beginning. Activities that encourage and promote interaction between the sites must begin when students first arrive and continue throughout the program. The students at the distant site will still form a close bond, but by interacting with students on the

opposite campus, they can effectively expand their available resources. This group identity and cohesiveness is beneficial and would even be more so if it occurred on both campuses.

One way that faculty can increase the distant site students' opportunity to see students on the opposite campus is to make it a part of their teaching practice to frequently change camera choice. By changing from the instructor camera to the student camera while students are speaking on the host campus regardless of the length of the comment or statement, maximum visibility will be given to that student. In order to facilitate this action on the part of the instructor, programs should consider using two computers so that the videoconferencing system can be supported by one and the peripheral functions can be supported by another. This would increase the ease of changing cameras without navigating through other programs first.

Students at the distant site perceive certain instructor characteristics and contributions to be better than others and are able to identify how those characteristics and contributions affect the learning process.

Instructor contributions as perceived by the students can have both positive and negative effects on the learning process. Students' attitudes about faculty can be based on

experiences with individual instructors as well as with faculty as a whole. "Attitudes are emotionalized beliefs about the worth of someone or something" (Verduin & Clark, 1991, p. 142). Students prefer to be exposed to learning experiences that are meaningful to them. Navigators tend to appreciate having readings available prior to a class. After having some discussion on a topic, they also want an opportunity for questioning and an appropriate activity that engages them in the topic in either small group discussion or dynamic activities. Engagers prefer to jump into the problem and then read and hear about the topic. Students believe that timely feedback to questions, assignments, and tests are necessary for them to be comfortable while learning.

Faculty may benefit from understanding that students have definite opinions about instructors' performance and their contributions to the learning process. Realizing that students have a preferred pattern of how they like to learn can also be helpful.

Asking students the straight forward questions that allow the instructor to have insight into their wants and needs is helpful. What students need may be specific to their current situation. Identifying these perceived wants and needs allows the instructor to plan accordingly so

students get the most from the learning situation. Making students a part of the planning process through formative evaluation can be helpful. In this case, students want a simple presentation of information that gives them a basic level of knowledge and they want opportunities to expand on that knowledge so that they can expand their cognitive understanding and abilities.

Faculty training on how to use distance technology through mock interaction may be beneficial so instructors are well prepared for their first interaction with students. "Faculty need assistance in order to understand and adapt to new roles" (Beaudoin, 1990, p. 22). Knowing the mechanics of the technology is one thing; incorporating it with teaching and learning is another. "Teachers must know something about the potential of technology to facilitate learning and to enhance their own effectiveness" (p. 22). It is helpful if instructors observe learning situations from both campuses so that they can recognize how students are different between the campuses.

Effort on the part of the instructor is required (Egan & Gibb, 1997) to encourage students in order to increase motivation and encourage learning. The best way for students in a distance classroom to learn is through engaging the student in active participation. "Regardless

of whether the telecourse is live or taped, the instructor must introduce novelty in several ways: asking unexpected questions that cause students to analyze their prior knowledge in new ways" (p. 36). This too will challenge current meaning schemes and perspectives with the goal of fostering learning and growth.

Students at the distant site require and effectively use a variety of resources in the learning process.

Students use a variety of resources to aid them in the learning process. Resources may be technical, non-technical, and personal. Those resources frequently used by students include themselves, peers, faculty, reference material, computers, and opportunities for "hands-on" activities through laboratory and clinical experiences.

Personality type and preferred learning strategy are factors that can be used to predict what resources will be of most value. Identifying what students' perceptions are about resources and making certain that those resources meet their needs can be beneficial. Having a plan to compensate for a perceived lack of resources in order to ensure that resources on the various campuses are at least equitable, if not equal, may be helpful as well.

When students identify a needed resource but perceive it as not being beneficial, they will search for a

replacement resource. If none are available from outside sources, they will often turn to themselves and engage in self-directed learning activities in order to meet their needs. "Teachers are increasingly becoming an intermediary between students and available resources" (Beaudoin, 1990, p. 22).

Students have certain expectations of the program, educational process, and the profession prior to entering the program that are challenged due to a lack of appropriate information and knowledge.

Students have definite expectations of the program, the educational process as it relates to learning, and their chosen profession. They expect the program to provide what they believed would be provided. The educational process is expected to be similar to what they have experienced in the past whether from a traditional or distance classroom. Students also have a preconceived idea about the profession of physical therapy and what their role is in that profession. All of these expectations are challenged as they progress through the program and are exposed to a variety of information in class and in the clinic.

How these students approach learning in this program with a distance component is different from the "traditional" classroom. They experience what Knowles

(1990) describes as "culture shock" based on the student being in an unfamiliar situation. This culture shock is a distorting dilemma that challenges the way in which the students approach learning. The meaning schemes that they held in the past will not work in many ways because the incorporation of distance technology changes the structure of learning (McCormack, 1998). Thus, a transformation in the way they view the concept of classroom learning will occur. This process will allow them to assess how they have viewed classroom learning in the past and change their meaning perspective to fit their current situation. This in turn will prepare them for future challenges to their meaning schemes and perspectives.

Students' expectations of the program and the learning process may be due to their past experiences and the lack of understanding of how a professional program is designed and how distance education affects learning. Programs should clearly articulate to students what can be expected before the program begins and should help them realize the reality of learning in this new environment.

Transformative learning may occur due to the unfamiliarity of the learning situation because students can no longer rely on their meaning perspectives and schemes that they used in previous experiences. Faculty

should realize that this occurs and help the students prepare for the "shock" they are about to receive as a result of being in this new environment. Students can be better prepared by participating in activities that help them understand the differences between this setting and other settings and by giving them information gleaned from previous students. "Students taking part in distance higher education generally perceive distance education positively although they may not get exactly what they expected" (Verduin & Clark, 1991, p. 117).

Students' expectations of their chosen profession change because their knowledge about physical therapy and what a physical therapist is and does is based on observation and reading with little background support. Now that they are in the process of developing as a professional, their view of the profession is better understood and more personal rather than an experience based on reading, observation, and experiences of others without content knowledge of professional duties and responsibilities. Programs that realize this will happen can encourage prospective students to engage in activities that will increase their understanding of the profession and the role that they will play in the profession.

Outcomes as determined by students' grades on the distant site can be equal to those by students on the main site even though the resources are not always equal.

Outcomes as determined by grades can be equal although the available resources and geographic location are different. Students' perceptions, attitudes, and opinions may be different from those of students on the main campus, but how they use the resources available such as their same-site peer group can compensate for these differences. They are also required to become more self-directed and use the resources they do have.

As students on the distant site go through a transformative process, their new understanding is a strength rather than a hindrance. Students empower themselves to see that their needs are met on a level that allows them to effectively participate in the learning process. Programs should realize that students have some basic needs, and if those needs are met appropriately, positive outcomes can be achieved.

Realizing that this can occur, it is important to encourage group identity and empowerment to insure that the students have the resources required in the learning process. This can be achieved through a formative evaluation so that changes can be made accordingly.

Summary Statement

Physical therapy education programs using distance education in order to expand their programs to different locations can be successful. As professional education changes to meet the current demands of today's healthcare environment, educational programs have the option of changing how they offer courses in order to meet the needs of students and society.

Those in programs choosing to expand their use of distance technology should realize that a commitment is required in order for the endeavor to be successful. Meeting students needs is just one form of commitment required by the program. Students have perceived needs that have an effect on their attitude and performance in the classroom. Understanding students learning strategies and personality types can help programs prepare to meet students' needs. By using a formative evaluation process, programs can effectively identify and address those needs. Qualitative methods of observation, focus groups, and interviews can be effective methods of performing a program evaluation.

Students have a variety of needs related to learning. In a professional program, they thrive when they are able to rely on peer support during the learning process. This

peer support allows them to develop a sense of professional identity and offers them a resource for learning.

Students also rely on instructors to aid them in the learning process and serve as a resource for learning. Instructors are not only expected to provide knowledge but they are expected to guide learning and allow the students a variety of opportunities with which they can make meaning of the learning task.

Resources for learning are those things that students use on a regular basis to aid in the learning process. Peers and faculty are two of those resources. Other resources include computers, journals and texts, and themselves. In the absence of needed resources students will often become self-directed in a learning task. In many cases the way they go about learning is foreign to them and a transformative process takes place as they gain new awareness and understanding. In turn, this new understanding becomes a resource for future learning.

Students come into a program with a variety of expectations of the program, the educational process, and their chosen profession. In each case their expectations are challenged as a result of their lack of appropriate information and knowledge. Students are required to face this challenge to their expectations, and a transformative

learning process occurs. Their new understanding is a result of their ability to reflect on their expectations and compare it to what they now know. This process helps them develop a professional identity and gives them a more mature view of the field.

In a professional program using distance education, technology is likely to be a major part of the process. Understanding how those technologies affect student learning is critical in that it can have an effect on their perceptions, attitudes and opinions about a program. Students rely on distance technology to offer them similar opportunities to those received by their peers in a more traditional setting. They realize that these opportunities are not equal, but they expect them to be equitable.

Outcomes as determined by grades are often considered the benchmark of educational success in professional programs. Students at the distant site of a program using distance technology can achieve outcomes equal to their peers on the main site even though they are in a different learning environment.

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Appendix A

Interactive Videoconferencing Evaluation Questionnaire

The purpose of this questionnaire is to assess your attitudes and opinions about your first semester in this program using interactive videoconferencing. This questionnaire was not designed to assess your attitudes or opinions about other issues related to this program, only those related to interactive videoconferencing. Feel free to give an honest opinion.

Answer the following questions by circling one "best" answer using the following scale.

Very poor = 1, poor = 2, average = 3, good = 4, very good = 5

When answering questions remember that your answer should reflect all of your courses. Please do not base your answer on experiences in one specific course.

Section 1. Instruction/Instructor Characteristics

1. The clarity with which the class assignments were communicated.

Very poor = 1, poor = 2, average = 3, good = 4, very good = 5

2. Your reaction to the typical amount of time the pre-prepared graphics (e.g., graphs, tables, pictures, outlines, notes, slides, etc.) were left on the screen to be copied down.

Very poor = 1, poor = 2, average = 3, good = 4, very good = 5

3. The degree to which the graphics helped you gain a better understanding of the course material.

Very poor = 1, poor = 2, average = 3, good = 4, very good = 5

4. The production quality of the prepared graphics used for the class.

Very poor = 1, poor = 2, average = 3, good = 4, very good = 5

5. The timeliness with which papers, tests, and written assignments were graded and returned.

Very poor = 1, poor = 2, average = 3, good = 4, very good = 5

6. The degree to which the types of instructional techniques that were used to teach the class (e.g., lectures, demonstrations, group discussions, case studies, etc.) helped you gain a better understanding of the class material.

Very poor = 1, poor = 2, average = 3, good = 4, very good = 5

7. The extent to which the room in which the class was held was free of distractions (e.g., noise from adjacent rooms, people coming in and out, other students talking with each other, etc.).

Very poor = 1, poor = 2, average = 3, good = 4, very good = 5

8. The extent to which the instructor made the Tulsa students feel that they were part of the class and "belonged".

Very poor = 1, poor = 2, average = 3, good = 4, very good = 5

9. The instructors' communication skills.

Very poor = 1, poor = 2, average = 3, good = 4, very good = 5

10. The instructors' organization and preparation for class.

Very poor = 1, poor = 2, average = 3, good = 4, very good = 5

11. The instructors' general level of enthusiasm.

Very poor = 1, poor = 2, average = 3, good = 4, very good = 5

12. The instructors' teaching ability.

Very poor = 1, poor = 2, average = 3, good = 4, very good = 5

13. The extent to which the instructors encouraged class participation.

Very poor = 1, poor = 2, average = 3, good = 4, very good = 5

14. The in-person/telephone/e-mail accessibility of the instructors outside of class.

Very poor = 1, poor = 2, average = 3, good = 4, very good = 5

15. The instructors' professional behavior.

Very poor = 1, poor = 2, average = 3, good = 4, very good = 5

16. Overall, these instructors were:

Very poor = 1, poor = 2, average = 3, good = 4, very good = 5

Section 2. Technological Characteristics

17. The quality of the television/screen picture.

Very poor = 1, poor = 2, average = 3, good = 4, very good = 5

18. The quality of the sound.

Very poor = 1, poor = 2, average = 3, good = 4, very good = 5

19. The adequacy of the screen size of the television/screen that received the class broadcasts.

Very poor = 1, poor = 2, average = 3, good = 4, very good = 5

20. The clarity of the videoconferencing system audio.

Very poor = 1, poor = 2, average = 3, good = 4, very good = 5

21. The brevity of talkback delays when communicating with the instructor over the videoconferencing system.

Very poor = 1, poor = 2, average = 3, good = 4, very good = 5

22. The promptness with which the instructor recognizes and answers student calls over the videoconferencing system.

Very poor = 1, poor = 2, average = 3, good = 4, very good = 5

23. The degree of confidence you have that classes will not be temporarily interrupted or cancelled due to technical problems.

Very poor = 1, poor = 2, average = 3, good = 4, very good = 5

Section 3. Course Management and Coordination

24. Your reaction to the present means of material exchange between you and the course instructor.

Very poor = 1, poor = 2, average = 3, good = 4, very good = 5

25. The accessibility of labs.

Very poor = 1, poor = 2, average = 3, good = 4, very good = 5

26. Your ability to access the library when, and if, needed.

Very poor = 1, poor = 2, average = 3, good = 4, very good = 5

27. Your ability to access a computer when, and if, needed.

Very poor = 1, poor = 2, average = 3, good = 4, very good = 5

28. The general conscientiousness of the site coordinator (e.g., in delivering materials, unlocking room doors, tuning in broadcasts).

Very poor = 1, poor = 2, average = 3, good = 4, very good = 5

29. The accessibility of the site coordinators.

Very poor = 1, poor = 2, average = 3, good = 4, very good = 5

30. The degree to which the site class or someone at the site was able to operate the television and videoconferencing system.

Very poor = 1, poor = 2, average = 3, good = 4, very good = 5

31. The promptness with which class material were delivered/sent to either you or the site.

Very poor = 1, poor = 2, average = 3, good = 4, very good = 5

32. The promptness with which broadcast failure was compensated for (e.g., audio-conferencing, gaining videoconferencing return).

Very poor = 1, poor = 2, average = 3, good = 4, very good = 5

33. Your ability to access departmental program personnel when needed.

Very poor = 1, poor = 2, average = 3, good = 4, very good = 5

Section 4. General and Demographic Information

34. Overall, the course was _____ based on instruction/instructor characteristics, technological characteristics, and course management and coordination.

Very poor = 1, poor = 2, average = 3, good = 4, very good = 5

35. Compared to conventional classroom courses (i.e., classes that are not televised), these courses were:

Much worse = 1, worse = 2, same = 3, better = 4, much better = 5

36. The workload required by these courses was:

1 = Too light
2 = Moderately light
3 = Just right

4 = Rigorous
5 = Too great

37. Excluding this semester, how many televised classes have you taken?

0 = 0
1 = 1
2 = 2
3 = 3

38. My ability to attend to classes delivered by videoconference, compared to conventional classroom courses is:

Very poor = 1, poor = 2, average = 3, good = 4, very good = 5

39. Name:

(Print)

(Signature)

Appendix B

Description of the Physical Environment

Laboratory

The laboratory is on the first floor and is a 864 square feet room (36' x 24') with a small closet for storage. The equipment in this room includes 12 high-low plinths, a hydrocollator, cold pack machine, 4 portable equipment carts, a small weight rack, stationary bicycle, treadmill, Vigor Gym, mat table, TV/VCR on a portable cart, telephone, computer, and many small tools useful in practice. A keypad lock always locks the room, and the students know the access code.

Classrooms

The two classrooms located on the second floor are similar in size and equipment. During the first two semesters of the program, physical therapy students only attended class in one of these rooms. The second room was not completed until November of 1999. The primary classroom is a 768 square feet room (31' x 20') that is equipped with videoconferencing equipment, tables, and chairs. There are three types of lighting available in the room. These include 12 overhead florescent lights, 6 recessed can lights located in the ceiling, and indirect lighting mounted on the walls of the classroom. The room

has a dedicated heating and air system with the thermostat located in the room. In the corner of the room is a 60" color television that rests on a 48" stand. On the wall a SmartBoard® hangs between two audio-in speakers. Also located on this wall is a student-camera. In the opposite corner of the room is the instructor console that includes a personal computer, sound control, telephone, outgoing monitor, Elmo camera, and remote controls for many pieces of equipment. Classroom lighting can be controlled from this position as well. Three units hang from the middle section of the ceiling, these are a data projector, instructor camera, and confidence monitor. Seating for up to 30 is provided by 5 rows of tables that are 18" x 60". The tables are aligned so three tables make the first and second row, and three rows of two tables make the remaining three rows. The tables against the north wall have two microphones per table. The tables against the south wall have one microphone each.

Resource Room

The resource room is a 405 square feet room (21' x 24') located next door to the main classroom. This room contains five student computers, a SmartBoard®, a color printer, a laser printer, a computer scanner, a five-drawer lateral file cabinet, a bookshelf, approximately 50

resource texts and resource videos. This equipment is situated along the walls of the room and the center of the room has a large rectangular table with seating for 15 to 20. A keypad lock that the students are able to open secures this room.

Lounge

The lounge is a 272 square feet room (16' x 17') located on the first floor. Students share this room with faculty and staff and can use this room for eating, storing food, preparing meals, reading, making local phone calls, socializing, and meetings. The room has a small sofa, two lounge chairs, a round dining table with five chairs, a side-by-side refrigerator/freezer with ice and water in the door, ice machine, microwave oven, sink, and a telephone.

Library

The OUHSC-Tulsa Library occupies most of the first floor of the Library Building. It has approximately 6,525 square feet of space and houses a collection of over 30,000 volumes. The library has approximately 7,000 book titles and has subscriptions to over 500 journals (College of Allied Health, 1999). Library staff can arrange for an interlibrary loan of materials not housed in this library. Students are able to request materials by interlibrary loan free of charge. The time frame for receiving materials

varies depending on availability and location of the material. If a library in the Tulsa area has the publication that a student requested, the student can choose to go to that facility to retrieve the requested material or proceed with the interlibrary loan. The library has 15 computers available for student use and offers technical support if needed.

Appendix C

Equipment

Media Equipment

Media equipment supported student learning in a number of ways. Since the students relied on computers to send and receive information related to learning it was important that students have access to the needed equipment. They also required copy machines in order to copy assignments that were not available on the computer. This equipment can be found in the student resource room unless otherwise stated. Students have access to this equipment without permission when the Library Building is open.

A Canon GP200S copier aids students in making copies of learning materials and is located on the second floor of the library building outside of the division office. Students purchase prepaid copy cards at .10 cents per page. They have access to two copiers in the library at .10 cents per page plus tax. Since the students are able to copy items at a cheaper rate using the division copier, the library allows students to check out journals and reference materials that are usually restricted to the library so that copies can be made.

Students have access to 5 computers in the resource room, and 15 computers in the library computer laboratory. The computers in the resource room are connected to the university network that allows students access to e-mail, the Internet, and the two printers located in the resource room. Students receive a computer account during the orientation period.

A HP Laser Jet 4050 printer is accessible to students in the resource room who have logged-on to the university network. They are able to print on it an unlimited number of pages free of charge.

A HP Desk Jet 890C Professional Series printer is also accessible to students in the resource room who have logged-on to the university network. They are able to print on this color printer an unlimited number of pages free of charge.

A ScanMaker X6EL scanner was placed in the resource room in March of 2000, at the request of the students. This equipment made it possible for students to scan pictures, documents, and diagrams into their reports, documents, and notes.

A SmartBoard® is connected to a computer in the resource room. It gives the learner the capability of drawing or writing on a marker board with a black, green,

red, and blue marker. Once students have completed their work, they can save the image on the computer. Students did not use this equipment during the year.

A 19" color television which does not receive any outside signal, is used in conjunction with a video cassette recorder. It was placed on a mobile base so students could use it in any room.

A video cassette recorder is used by students to watch videos that have been provided by instructors, review tapes from the resource room, or to view other tapes of general interest. It is on a mobile base with a television so that it can be used in a number of places.

Non-Media Equipment

The majority of the non-technical equipment used by students in the learning process is located in the laboratory. This equipment is available to support student learning in a variety of areas. Students frequently used the non-media equipment to practice skills that were required as part of a course. For instance, once the students were told that they would have to "check-out" on their ability to appropriately use ultrasound as a modality in a patient case scenario. Students' practiced independently using the equipment required for the task.

The students have access to the following equipment without permission at any time that the Library Building is open:

Anatomical models (full skeleton and multiple joints)
Anatomical reference posters (variety)
BAPS system (2)
Colpac chilling unit
Digital stopwatch (4)
Dumbbells - 2#, 4#, 6#, 8#, and 10#(2 each)
Dynatron electrical stimulation/ultrasound unit (4)
Electric Hi-Lo treatment tables (12)
Exercise mat 6' x 8'
Footstools (12)
Forearm crutches (2 pair)
Hydrocollator heat packs (variety of sizes)
Hydrocollator heating unit
Jamar hand grip dynamometer
Landice 8700 LTD treadmill
Linen (variety)
Mat table 6' x 8'
Mobile stools (12)
Mobile weight rack
Nested climbing stools (set of 4)
Push up blocks
Quad board (2)
Quad cane (2)
Short strap weights - various weights from 1/4# to 15#
Shoulder wand (2)
Sphygmomanometer (10)
Stainless steel utility cart (4)
Standard cane (2)
Standard crutches (12 pair)
Standard walker (4)
Standard wheelchairs (4)
Stationery cycle
Stethoscope (10)
Theraband (variety)
Traction accessories
Transfer board (4)
Triton MP1 traction unit
Triton TRE-24 traction table
Ultrasound coupling agent
Vertebral model with stand (2)
Vigor gym exercise package

Appendix D

Schedules

First Semester

PHTH 7112: Current Issues in Physical Therapy met weekly on Monday afternoons from 1:10 p.m. to 3:00 p.m. The class introduced "the student to the history of the philosophy and theory of the practice of physical therapy, the influence of philosophy and theory in the current environment, and projected trends in the practice of physical therapy" (OUHSC, 1999).

PHTH 7122: Introduction to Concepts in Rehab Sciences met weekly on Tuesday from 9:10 a.m. to 11:00 a.m. The goal of this course was to "introduce the professional competencies, shared theoretical models, historical foundations, clinical reasoning, and service delivery systems for occupational and physical therapy" (OUHSC, 1999).

PHTH 7143: Control of Human Movement I met twice weekly for a didactic session on Tuesday and Thursday from 11:10 a.m. to 12:00 p.m. It met once weekly for a laboratory session on Thursday from 9:10 a.m. to 11:00 a.m. This course introduced the students to "the four areas that comprise the study of human movement: (1) biomechanics, (2) motor control, (3) motor learning, and (4) neuromuscular

physiology. This course teaches the biomechanics and physiology of human movement, with special emphasis on the functional anatomy of therapeutic activities" (OUHSC, 1999).

PHTH 7151: Advanced Study in Anatomy met once each week on Tuesday from 1:10 p.m. to 2:00 p.m. This course was an intensive course that covered human anatomy and built upon the students entering knowledge of the subject.

PHTH 7133: Clinical Process met once weekly on Wednesday from 1:10 p.m. to 3:00 p.m. for a didactic session and once weekly on Friday from 9:10 a.m. to 11:00 a.m. for a laboratory session. The purpose of this course was to "assist students to develop the central skills of the rehabilitation professional: clinical decision making; effective written, verbal, and nonverbal communication; intervention philosophies and tools for practice; basic skills for working with patients; and interpersonal skills" (OUHSC, 1999).

PHTH 7162: Introduction to Evidence-Based Practice met once each week on Thursday from 1:10 p.m. to 3:00 p.m. The purpose of this course was to "prepare students to use the scientific literature in rehabilitation and related disciplines to make sound, evidence-based patient management decisions" (OUHSC, 1999).

Second Semester

PHTH 7223: Evaluation & Intervention I met twice weekly for a didactic session on Monday and Wednesday from 9:10 a.m. to 10:00 a.m. and once weekly for a laboratory session on Tuesday from 9:30 a.m. to 11:30 a.m. The purpose of this course was to "address issues and areas of evidence-based practice that relate to the total scope of the management of upper extremity dysfunctions, wound care, and the appropriate use of modalities" (OUHSC, 1999).

PHTH 7243: Control of Human Movement II met twice weekly for didactic sessions on Monday and Wednesday from 10:10 a.m. to 11:00 a.m. and once weekly for a laboratory session on Tuesday from 12:30 p.m. to 2:30 p.m. This course was a continuation of PHTH 7143: Control of Human Movement I. The purpose of this course was to "explore current concepts in motor learning and motor control, and provide students with a deeper understanding of the biomechanics of human movement, including the analysis of gait" (OUHSC, 1999).

AHE 4433: Pathology met three times weekly on Monday, Wednesday, and Friday from 11:10 a.m. to 12:00 a.m. The purpose of this course was to introduce "the fundamental concepts of disease, how diseases affect the normal

functioning of the body, and how the body attempts to counteract the effects of disease processes" (OUHSC, 1999).

PHTH 7213: Introduction to Orthopedic Management met once weekly on Monday from 1:10 p.m. to 3:00 p.m. There was no designated laboratory time for this course, but some content from this course was usually covered in a laboratory session or didactic session on Thursday's from 9:00 a.m. to 11:00 a.m. The purpose of this course was to "provide students with an understanding of the symptomatology, prognosis, and evidence-based treatment of selected orthopedic conditions" (OUHSC, 1999).

PHTH 7611: Patient Education met once weekly on Friday from 10:10 a.m. to 11:00 a.m. The purpose of this course was to introduce the concept of patient education as a process, goal, and attribute of the learner. Topics included health promotion, disease prevention, planning, domains of learning, potential barriers to learning, supplements to learning, and the issues of culture, literacy, and age on outcomes.

Appendix E

CONSENT FORM

Authorization

I, _____, hereby authorize or direct Steven Chesbro, or associates or assistants of his choosing, to perform the following procedure.

Description

1. A descriptive study of a professional physical therapy program utilizing distance technology.
2. This is a research study being conducted by the researcher as part of his doctoral dissertation through Oklahoma State University.
3. This research will provide valuable information about the development of a professional program utilizing distance technology. The duration of subject participation may vary among participants. Participants are free to withdraw from the study at any time.
4. The procedures used to conduct this study will include surveys/questionnaires, focus groups, interviews, grade review, and assessment tools.
5. No experimental procedures will be used in this study.
6. No foreseeable risks have been identified.
7. The benefit of this research is that it will allow the University of Oklahoma Health Sciences Center and the researcher to better understand the effect of distance technology on their professional physical therapy program.
8. All information will be confidential.
9. If participants require further information about this study, they should contact:

Sharon Bacher
IRB Executive Secretary
Oklahoma State University
203 Whitehurst
Stillwater, OK 74078
405.744.5700

Voluntary Participation

I understand that participation is voluntary and that I will not be penalized if I choose not to participate. I also understand that I am free to withdraw my consent and

end my participation in this project at any time without penalty after I notify the project director.

Consent

I have read and fully understand the consent form. I sign it freely and voluntarily. A copy has been given to me.

Date: _____ Time: _____
(a.m./p.m.)

Signed: _____

I certify that I have personally explained all elements of this form to the subject before requesting the subject to sign it.

Signed: _____

Appendix F

OKLAHOMA STATE UNIVERSITY
INSTITUTIONAL REVIEW BOARD

Date: April 18, 2000 IRB #: ED-00-248

Proposal Title: "STUDENT LEARNING IN A DUAL-CAMPUS PROFESSIONAL PHYSICAL
THERAPY PROGRAM USING DISTANCE EDUCATION "

Principal Investigator(s): Gary Conti
Steven Chesbro

Reviewed and Processed as: Exempt

Approval Status Recommended by Reviewer(s): Approved

Signature:



Carol Olson, Director of University Research Compliance

April 18, 2000

Date

Approvals are valid for one calendar year, after which time a request for continuation must be submitted. Any modification to the research project approved by the IRB must be submitted for approval with the advisor's signature. The IRB office MUST be notified in writing when a project is complete. Approved projects are subject to monitoring by the IRB. Expedited and exempt projects may be reviewed by the full Institutional Review Board.

VITA

Steven Bryce Chesbro

Candidate for the Degree of

Doctor of Education

Dissertation: BECOMING ADULT LEARNERS: STUDENT LEARNING IN A DUAL-CAMPUS PHYSICAL THERAPY PROGRAM USING DISTANCE EDUCATION

Major Field: Occupational and Adult Education

Biographical:

Education: Graduated from Charles Page High School, Sand Springs, Oklahoma, in May 1985; received a Bachelor of Arts degree in psychology from Northeastern State University, Tahlequah, Oklahoma, in May 1989; received a Bachelor of Science degree in physical therapy from Langston University, Langston, Oklahoma, in May 1991; received a Master of Science degree in college teaching from Northeastern State University, Tahlequah, Oklahoma in May 1992; received a Master of Health Science degree in physical therapy from the University of Indianapolis, Indianapolis, Indiana, in August 1997; received a Graduate Certificate of Gerontology from Oklahoma State University, Stillwater, Oklahoma, in May 2000. Completed the requirements for the Doctor of Education degree at Oklahoma State University in July 2000.

Experience: Assistant Professor, Department of Physical Therapy, College of Allied Health, University of Oklahoma Health Sciences Center, Tulsa, Oklahoma, 1999 to present.