A NEEDS ASSESSMENT FOR A SELF-PACED RESPIRATORY THERAPY PROGRAM FOR ON-THE-JOB TRAINEES

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I dedicate this thesis to my grandparents, Mr. and Mrs. Allan McCullough whose love and reverence for learning has encouraged me to become a lifelong learner. My deepest appreciation is extended to my parents, Mr. and Mrs. Nick Barna, my husband, Frank, and my two daughters, Melissa and Amanda, for their love and support in my educational endeavor.

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CHAPTER I

INTRODUCTION

The concept of investigating the need for a self-paced respiratory therapy technician certification program for uncredentialed on-the-job trained respiratory care practitioners (RCP) in Oklahoma was formulated because of repeated inquiries from the uncredentialed practitioners and from Respiratory Therapy Department directors. The on-the-job trained RCP's were requesting Tulsa Junior College to add to their present traditional program an alternate method for them to obtain eligibility for certification in the field of respiratory therapy. At the same time, the Respiratory Therapy Department directors were requesting Tulsa Junior College to provide a non-traditional educational pathway for their uncredentialed practitioners to upgrade their skills and improve patient care. These requests were influenced by national, regional and local changes occurring in the structure of the American health care system as seen in the report PEW Health Professions (1992) and by the lack of educational flexibility for adult learners in the state of Oklahoma.

Nationally, this declaration of need was influenced by:

1. a government study conducted by the National Bureau of Labor Statistics which was reported in the National Bureau (1990). The study estimated a 53% increase in additional job openings for

respiratory care practitioners between the years 1990 and 2005.

2. the aggressive pursuit by the American Association for Respiratory Care in the attainment of licensure for respiratory care practitioners in all states by the year 1995 as reported at the "AARC Summer Forum", 1992.

3. the increasing focus on meeting national health care needs and cost containment (National Bureau, 1990).

Regionally, this need was reinforced because of:

1. a state-wide manpower study conducted by the Oklahoma Society for Respiratory Care (OSRC), which identified 405 uncredentialed on-the-job trained respiratory care practitioners out of 1005 total practitioners in the state of Oklahoma ("Oklahoma Society," 1991).

2. the pursuit of licensure for credentialed respiratory care practitioners by the OSRC by 1995.

3. the limited number of respiratory therapy schools and alternate educational pathways in the state of Oklahoma ("Joint Review Committee," 1991).

Locally, this need was demonstrated in the form of the Tulsa Junior College Respiratory Therapy Advisory Committee which has consistently requested the college and faculty to produce more graduates to fulfill the hospital manpower requirements for the community ("Tulsa Junior College," 1992).

Statement of the Problem

A 1991 state-wide manpower survey conducted by the Oklahoma Society for Respiratory Care revealed that 405 out of 1005 respiratory care practitioners were uncredentialed and trained on-the-job. The national association for respiratory care has proposed that all respiratory care practitioners will be credentialed by 1995. Forty percent of the current practitioners in Oklahoma have not yet been credentialed. Therefore, these individuals would require additional education through an American Medical Association (AMA) approved respiratory therapy school to be eligible for a credential.

Purpose of the Study

The purpose of the study was to determine whether a self-paced respiratory therapy program would be a viable alternative to achieving a respiratory therapy technician certification credential.

Objectives of the Study

Following are the objectives of this study:

1. To determine how many of the 405 uncredentialed on-the-job trained respiratory care practitioners in Oklahoma would participate in an educational program to obtain a certification credential.

2. To determine how many of the 405 uncredentialed on-the-job trained respiratory care practitioners in Oklahoma would participate in a traditional educational program to obtain a certification credential.

3. To determine how many of the 405 uncredentialed on-the-job trained respiratory care practitioners in Oklahoma would participate in a self-paced educational program to obtain a certification credential.

4. To determine how many of the 405 uncredentialed on-the-job trained respiratory care practitioners in Oklahoma would travel to Tulsa for orientation, final exams and a specialty rotation in neonatal intensive care (NICU) or pulmonary function testing (PFT) as part of a self-paced respiratory therapy technician certification educational program.

5. To determine how many of the 405 uncredentialed on-the-job trained respiratory care practitioners would be eligible for advanced standing by the number of years experience.

6. To determine how many of the 405 uncredentialed on-the-job trained respiratory care practitioners would be eligible for advanced standing by the types of experience.

7. To determine how many of the 405 uncredentialed on-the-job trained respiratory care practitioners would require financial aid.

8. To determine how many of the 405 uncredentialed on-the-job trained respiratory care practitioners would be eligible for advanced standing by previous college course work in mathematics.

9. To determine how many of the 405 uncredentialed on-the-job trained respiratory care practitioners would be eligible for advanced standing by previous college course work in the sciences.

Scope of the Study

The scope of the study included:

1. The entire population of 405 uncredentialed on-the-job trained respiratory care practitioners were identified by the Oklahoma Society for Respiratory Care (OSRC) 1991 statewide manpower survey according to urban and rural cities in Oklahoma which had hospitals with Respiratory Care Departments.

2. Questions which were asked only in areas pertaining to a student seeking certification in the field of Respiratory Therapy.

Limitations of the Study

The following limitations were recognized as factors which may have affected the outcome of this study. These limitations have been identified in conjunction with internal validity, external validity and reliability:

1. The respondents in the study could make mistakes in reading the instrument because they may have poor reading skills or a language barrier.

2. The attitudes of the respondents may have been affected by fatigue or lack of interest because the surveys were completed in a hospital work environment.

3. It is only suitable for uncredentialed on-the-job trained respiratory care practitioners.

4. The respondents may have been prejudged for or against the program because of influences from other co-workers or family members.

Definition of Terms

The following definitions were included to help clarify the specific and technical terms utilized in this study.

AARC - American Association for Respiratory Care.

Accelerated Pathway - A method of allowing qualified students to complete program requirements in less time than a traditional program.

Advanced-Standing Segment - The portion of a curriculum that identifies mechanisms for obtaining credit based on previous life experience, including academic and work-related experience.

Andragogy - A philosophy defined as the art and science of helping adults learn.

Associate Degree - A degree awarded by a university, college, community or junior college to a person who has completed a required course of study. An associate degree usually indicates completion of two years of college work. The most commonly awarded associate degrees are the Associate in Arts and the Associate of Science.

CAHEA - Committee on Allied Health Education Accreditation. The committee that grants the final accreditation for all respiratory therapy educational programs.

Certificate of Completion - Written documentation that provides a declaration that a person has completed a course of prescribed study and is qualified to be so cited. Usually awarded by the institution that sponsors the course of study.

Certification - The process by which a nongovernmental agency or association grants recognition to an individual who has met

certain predetermined qualifications certified by the agency or association.

Community Survey - This type of survey is utilized by educators conducting descriptive research. A community survey can be used as a fact-finding tool such as, collecting data on attitudes and opinions from a specific segment of society or on particular conditions within the study.

Competency-Based Education - A type of program that has identified learning outcomes and behavioral objectives for student learning before the specific content is taught. Learning outcomes are identified in advance of teaching.

Credentialed - This term refers to a document which indicates that an individual has achieved a specified level of competence. Credentialing has three forms: licensure, certification and registration.

Delphi Technique - Originally developed by the Rand Corporation in 1953, the technique is a method for systematic solicitation and aggregation of informed judgements on key questions and issues from a group of experts.

Entry-Level Program - A JRCRTE accredited program that prepares individuals for the NBRC entry-level certification exam and awards a certificate of completion acceptable to the NBRC.

JRCRTE - Joint Review Committee for Respiratory Therapy Education. An agency that reviews the self-study of a respiratory therapy program, performs a site visit and recommends accreditation of the program to CAHEA.

Licensure - The process by which an agency of government grants permission to persons meeting predetermined qualifications to engage in a given occupation and/or use a particular title.

NBRC - National Board for Respiratory Care. An independent organization which develops and administers examinations to candidates who are eligible to take the certification and/or registry for respiratory care.

Needs Assessment - A specific front-end technique that is utilized to seek opinions on optimals, actuals, feelings, causes and solutions from a variety of sources.

Non-Traditional Program - Any program that differs from the traditional model of a respiratory therapy program identified by the JRCRTE essentials.

On-The-Job Training - An individual who learns a trade or occupation solely through experience while working at a job.

OSRC - Oklahoma Society for Respiratory Care. A state organization that is an extension of the national professional organization for respiratory care.

Reciprocity - This term relates to the credentials obtained by a respiratory care practitioner. If a practitioner is certified or registered through a national board examination then these credentials are recognized by all fifty states in the U.S.

Respiratory Care - A term adopted by the American Association for Respiratory Therapy in 1983, to describe in broader terms the scope of practice in the field of Respiratory Therapy. The terms respiratory therapy and respiratory care are currently being used

synonymously within the profession.

Respiratory Care Practitioner (RCP) - An individual who works in the field of respiratory care and may be credentialed or uncredentialed.

Self-Directed Learning - A series of related episodes, adding up to at least seven hours. In each episode more than half of a person's total motivation is to gain and retain certain fairly clear knowledge and skills, or to produce some other lasting change in himself.

Self-Paced Learning - A series of learning projects, supervised and directed by a teacher, that allow an adult to progress at their own pace. The process becomes nonthreatening because the learner has control over his/her method of learning.

Technician - One who specializes in the technical details of a subject. One who has acquired the ability to perform a complex task or set of tasks. These abilities and skills are usually acquired through formal educational programs of two years or less in length.

Therapist - One who specializes in the therapeutic and technical duties of a subject. One who has acquired the ability to supervise, direct and teach less skilled personnel. One who serves as a resource to a physician and health care facility staff. These abilities and skills are acquired through formal educational programs of two years or more in length.

Traditional Program - A respiratory therapy educational program, that is college or university based, provides training for

technicians and/ or therapists and utilizes an inflexible curriculum schedule.

Uncredentialed - One who has not received a document which indicates a specified level of competence in certain skills or tasks.

CHAPTER II

REVIEW OF THE LITERATURE

Introduction

The need for allied health personnel in the field of respiratory care became apparent soon after World War II. The incorporation of a professional organization called the Inhalation Therapy Association (ITA) in 1947, spurred an interest in establishing a formal inhalation therapy educational program in Chicago (Eubanks, 1985). The initial program began in 1950, and was designed to be 16 weeks in duration with the participants receiving a Certificate of Completion (Czachowski, 1991). The rapid expansion of the health care field coupled with the explosion of technology led to a logarithmic demand for technicians in the major metropolitan and academic health care centers. The availability of formal educational technician schools were scare. Therefore, the predominant form of technician training became an apprenticeship or on-the-job training. The future technicians were orderlies, aides or individuals off the street and were trained in hospitals by physicians interested in respiratory problems. The forms of instruction were highly individualized and reflected the idiosyncracies and prejudices of the physician mentors. As the demand for technicians increased, the need for more schools became crucial. An alliance between technicians and physicians was

established in the form of an advisory committee to the Council on Medical Education (CME) of the American Medical Association (AMA) in 1956. A resolution to assist in developing inhalation therapy schools was passed by the AMA in 1957 and the CME developed curriculum guidelines or Essentials for an Approved School of Inhalation Therapy Technicians by 1962 (Burton, 1984). The continued lack of trained technicians and the expanding technology resulted in several revisions of the essentials along with the incorporation of a separate accreditation agency in 1970. The organization was named the Joint Review Committee for Respiratory Therapy Education (JRCRTE) and immediately recommended academic sponsorship for technician and therapist programs.

Most of the early educational programs were hospital sponsored, but with the inception of JRCRTE all respiratory educational programs began to operate under the aegis of postsecondary educational institutions. At the completion of a technician or therapist program the participants would take national board exams to achieve a credential of Certified Respiratory Therapy Technician (CRTT) or Registered Respiratory Therapist (RRT). These credentials have been given reciprocity status to allow the practitioners to work in any state or territory in the United States without taking another board exam.

National Influence on Respiratory Therapy Education

The national data that has had the greatest influence on

current ideology in respiratory care education has come from studies conducted by agencies of the federal government and by a private organization called the PEW Charitable Trusts. These organizations have identified specific areas of need in the management of future national health care.

U.S. Bureau of Labor Statistics

At the beginning of this decade, the U.S. Bureau of Labor Statistics released in the National Bureau (1991), information concerning the future growth of occupations in the health services from 1990 to 2005. These studies (Figure 1) reveal that employment in the health care industry will grow by 3.9 million or 17% of total employment growth. This growth has been attributed to the rise in the expenditure for health care in the gross national product (GNP). Three factors that have had an impact on this escalated requirement for health services includes:

1. a shift in the mean age of the population to 75 and older, which translates to an increase of 35% of the total population requesting more health care.

2. the increase of health care needs of the baby boom generation as it ages.

3. new medical technology creating a demand for more intensive care.

The U.S. Bureau of Labor Statistics conducted extensive research into the growth of selected occupations in the health services. These results (Figure 2) demonstrated a 53% increase in

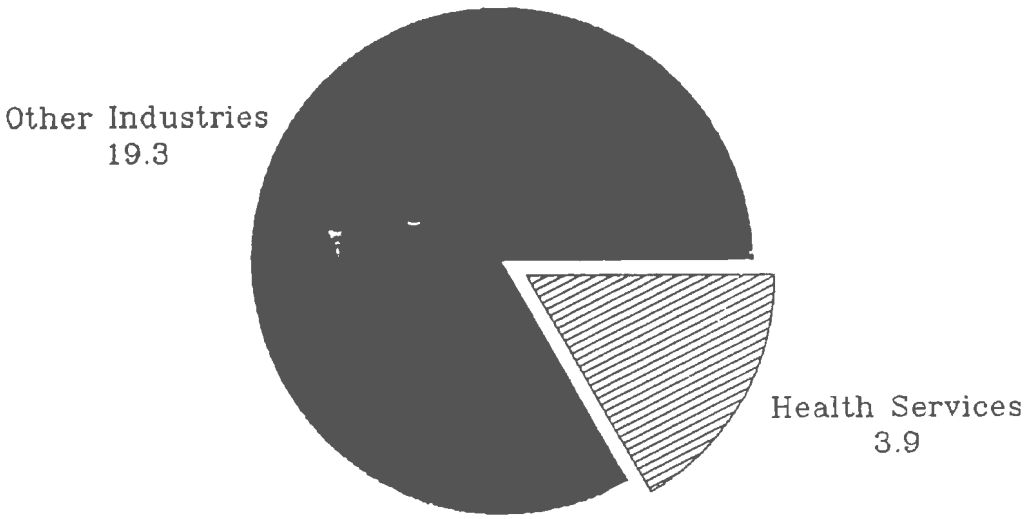

Figure 1. Employment Growth 1990-2005 (millions)

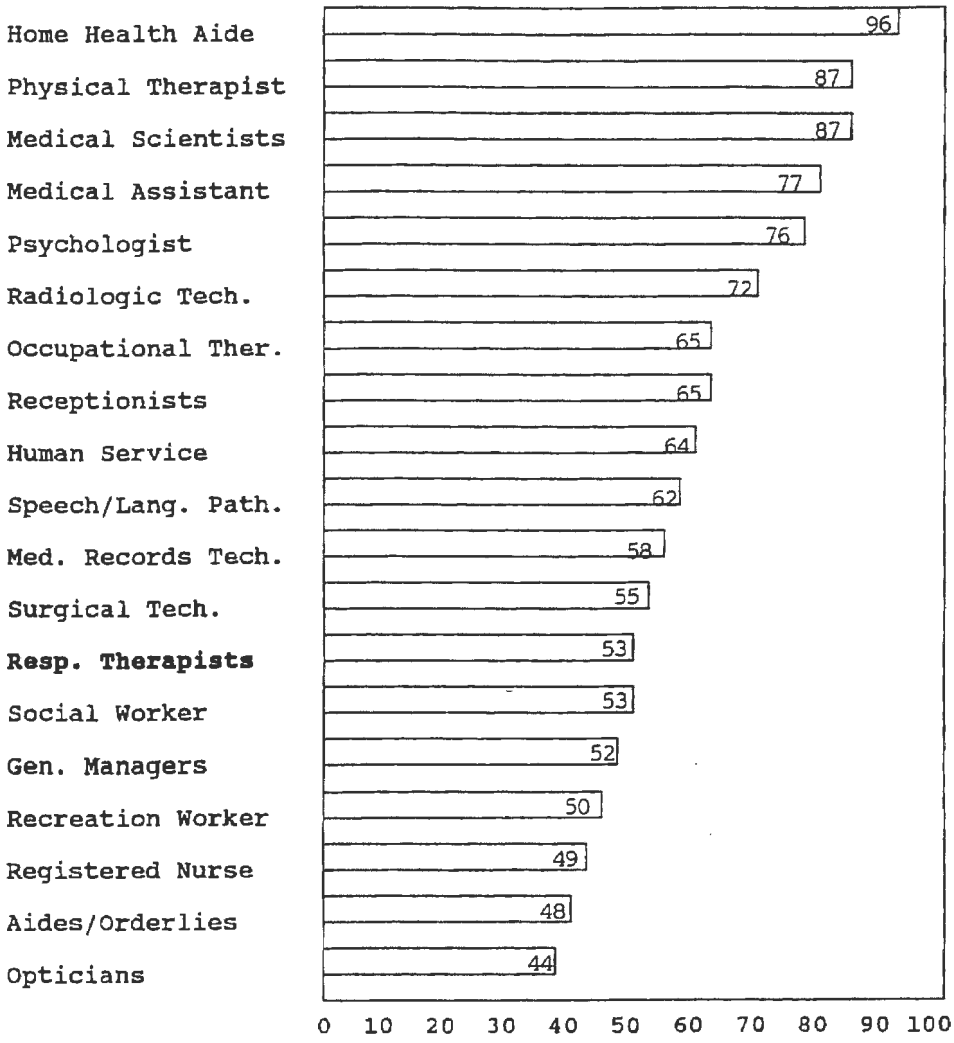

Figure 2. Growth of Selected Occupations in Health Services, 1990-2005 (percent)

the need for new respiratory care practitioners for 1990 to 2005. The impetus behind this demand has been the significant increase in middle-aged and older populations which have a greater tendency for cardiopulmonary diseases. The hospitals have continued to be the primary employer but the largest deficiency has been perceived in home care services (National Bureau, 1991). The U. S. Bureau of Labor Statistics has additionally identified the fastest growing occupations requiring some postsecondary training or extensive employer training projected for 1990 to 2005 (Figure 3). These figures represent a 52% increase in new respiratory care practitioners that need postsecondary training programs in the field of respiratory care (National Bureau, 1991).

PEW Health Professions Commission

The PEW Health Professions Commission was organized by Thomas W. Langfitt M.D., President of the Pew Charitable Trusts. This Commission was charged with researching the present status of the national health care system and formulating recommendations for its reform (PEW Health Professions, 1992). These recommendations have taken two parallel paths. The first path concerns reorganization and refinance of the current system to contain costs and provide access for all citizens. The second path outlines reform in education and training to produce more effective and responsive professionals. The proposed paradigm, advocated strategies for change in educational institutions to reflect:

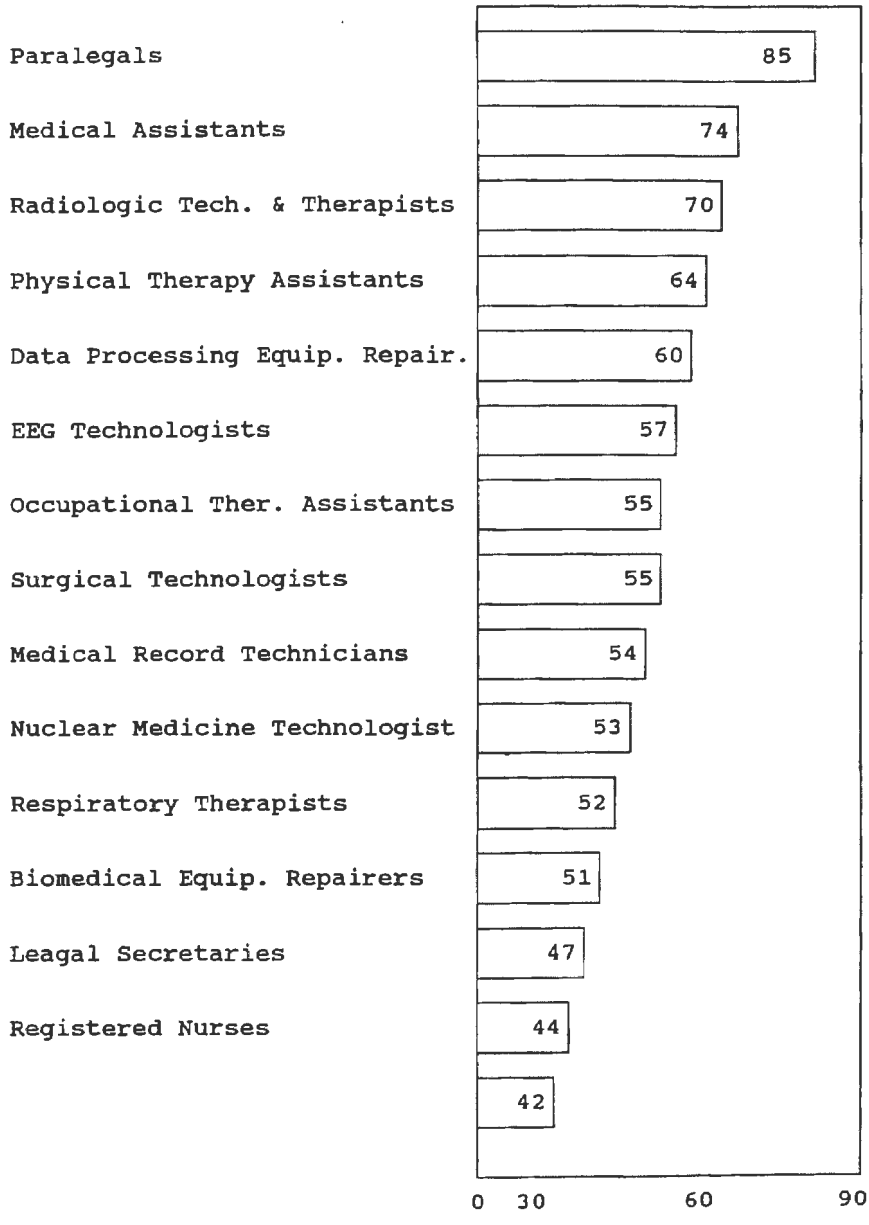

Figure 3. Fastest Growing Occupations Requiring Some Postsecondary Training or Extensive Employer Training, 1990-2005 (Percent)

1. a more global orientation.
2. a redefinition of theoretical and clinical educational cores
3. flexibility in educational programs to provide easier access to professional training
4. accountability to incorporate community needs, and
5. a more competent and competitive health care professional who can think critically and solve problems of the future (PEW Health Professions, 1992, p. 10).

In conjunction with this new paradigm, the Commission strongly recommended the pursuit of licensure for health care professionals to protect the public from unqualified practitioners and provide a more efficient and less costly method of health care management.

American Association for Respiratory Care

The professional organization, the Inhalation Therapy Association, was funded in 1947. In 1984, the organization became the American Association for Respiratory Care (AARC) (Eubanks, 1985). The AARC has monitored the rapid growth and increased responsibilities that have become part of the respiratory care practitioners current role. The AARC has been actively involved with the Oklahoma Society for Respiratory Care (OSRC) in obtaining licensure for respiratory care practitioners (RCP) in Oklahoma.

The advent of licensure for the respiratory care profession began in 1969 with the state of Arkansas (Konkle, 1992; Ruesch, 1991). Since that time the AARC has incorporated into its annual objectives the goal of licensure for all 50 states. The projected

completion of this goal has been updated to 1995. The AARC has designated one million dollars of their annual budget to be available to unlicensed state societies for lobbying and have hired a full-time legislative consultant to assist with state licensure bills ("AARC Summer Forum", 1992). As of August 1992 (Figure 4), the AARC has a remainder of 15 states to assist in achieving licensure (Bunch, 1992; National Institute, 1979).

Regional Influence On Respiratory Care Education

The regional data that has had the greatest impact on recent thought in respiratory care education has come from studies and accreditation guidelines. The OSRC, the Joint Review Committee for Respiratory Therapy Education and the Committee for Allied Health Education and Accreditation have identified specific reasons for providing a viable alternative method in educating respiratory care practitioners.

Oklahoma Society for Respiratory Care

The Oklahoma Society for Respiratory Care (OSRC) and the AARC have been actively involved in obtaining licensure for RCP's in Oklahoma. The proposed licensure bill has designated the certification credential as the minimum requirement for licensure. The OSRC has written a licensure bill and it was presented at the Spring 1992 legislative session for a vote. It was defeated by a vote of 35 against and 3 for the bill. The OSRC has planned to

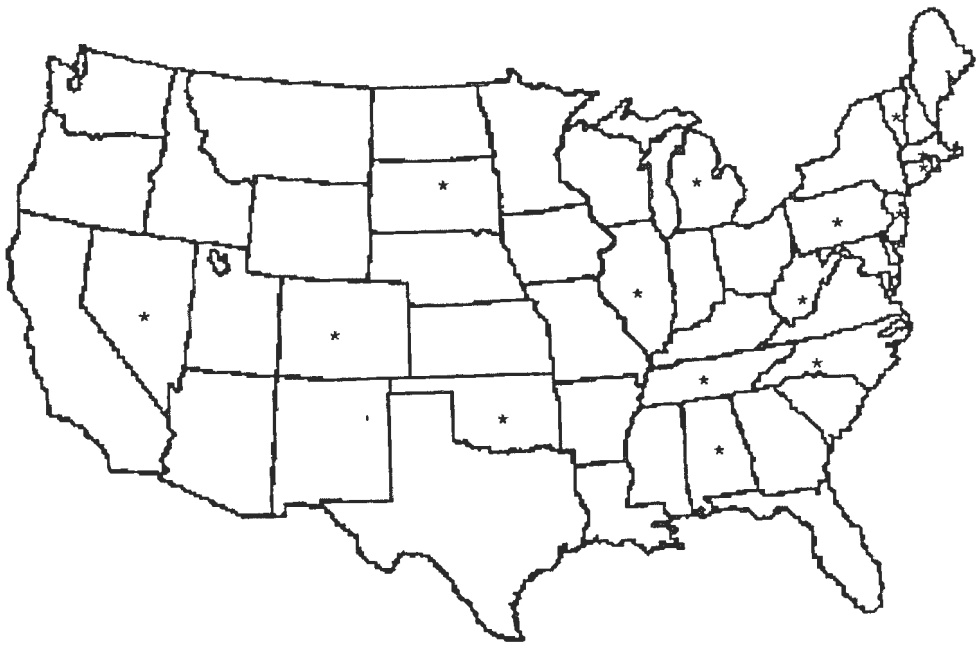

Figure 4. States Having Legal Credentialing as of August 1992

* States with no legal credentialing

present it again in a future legislative session after the bill has been revised ("AARC Annual Convention", 1992).

1991 Manpower Survey of Respiratory Care Practitioners in Oklahoma

During the process of researching and developing a strategy for state licensure, the OSRC conducted a practitioner survey in February 1991 ("Oklahoma Society", 1991). This data indicated that two-fifths of the working practitioners in the state would be directly affected by state licensure. This translates to 405 uncredentialed OJT respiratory care practitioners out of the 1005 practitioners in the state, in addition to 54 positions that were vacant in hospitals throughout Oklahoma. The combination of these two factors resulted in a RCP manpower shortage of approximately 50%. This percentage would have a significant impact on the quality and quantity of respiratory care in Oklahoma and indicates an immediate need for respiratory care educational programs to serve these individuals.

Joint Review Committee for Respiratory Therapy Education

The Joint Review Committee for Respiratory Therapy Education (JRCRTE) has accredited four respiratory therapy programs in Oklahoma. Two programs are part of the vocational-technical system and two programs are in community/junior colleges. All of the programs have a traditional format, where a student must attend

classes during the day, five days a week. The enrollment has been limited to 10 to 20 students for each program that begins once a year.

Committee on Allied Health Education and Accreditation

The 1991 Committee on Allied Health Education and Accreditation (CAHEA) reported a national attrition rate for respiratory therapy programs at 50% ("Allied Health Education", 1992). The attrition rate in Oklahoma has not been as high as the national average, and the respiratory therapy programs have managed to produce a sufficient number of respiratory care practitioners to meet the state's health care demands without having licensure (Czachowski, 1991).

The top six drop out factors for respiratory therapy students (Figure 5) have been cited as reasons for a higher national attrition rate. These factors are family problems/ obligations with 43%, financial problems with 43%, student capability 34%, heavy study demands 30%, inadequate academic preparation 27% and wrong career choice 24% (Czachowski, 1991). These national reasons for drop out and/or stop out factors correspond with respiratory therapy educational program research conducted by CAHEA ("Allied Health Education", 1992).

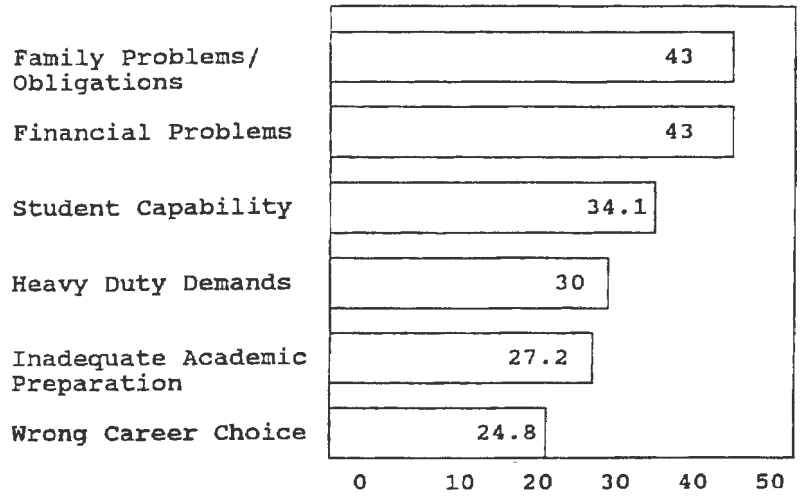

Figure 5. Dropout Factors for Respiratory Therapy Students

Local Influence On Respiratory Care Education

The Tulsa Junior College Respiratory Therapy Advisory Committee had consistently requested the college and faculty to produce more graduates to fulfill hospital manpower requirements for the community ("Tulsa Junior College", 1992). The graduates were mainstreamed into the hospital workforce very quickly and it had not been unusual for first year students to be working before graduation.

Professional Demands On Respiratory Care Education

The AARC has been an integral part of the growth and refinement of respiratory care as a profession. The organization has been sensitive to the changes in health care and how it impacts the profession. Currently, the Association has become more focused on the area of respiratory care education. This convergence on education has been influenced by the PEW Commission and the emphasis on national health care.

A Delphi study conducted by O'Daniel (1992) identified the knowledge, skills, and affective behaviors that will be required for the future respiratory care practitioner in the year 2000 (RCP 2000). This study supported the earlier predictions of respiratory care educators and the PEW Commission Report concerning changes in future educational programs. The requirements that the study recommended for educating RCP's of the future are summarized in

Tables I, II and III. Some of the important criteria identified by the subject matter experts (SME's) were a strong background in science and mathematics, proficiency in respiratory care knowledge and skills, critical thinking abilities, communication skills, ethics, health promotion/disease prevention, interpersonal skills, a good work ethic, self-directed learning and professionalism (Bunch, 1990; Czachowski, 1991; Wessing, 1989).

This demand for the RCP 2000 has had a significant impact on the andragogy of respiratory care education. The critical deficit in multiskilled specialists has impelled educators to be creative in the restructuring of respiratory care curriculum and programs, and to meet the needs of health care employers and potential students. The potential student characteristics include new students to the field, on-the-job trained RCP's and credentialed practitioners requesting continuing education.

The AARC's Task Force on Professional Direction in conjunction with the Education Committee conducted a nationwide survey to ascertain the availability of advanced standing segments, accelerated pathways or other non-traditional programs in the field of respiratory care. The goal of this task force was to identify model programs for other schools to adopt to quicken the pace of some students education and increase the number of qualified entry-level technicians in the workforce (Czachowski, 1991).

TABLE I

COGNITIVE DOMAIN KEY KNOWLEDGE AND SKILLS
OF RCP 2000

Knowledge	Cognitive Skills
Respiratory care theories and procedures	Reading skills
Medical terminology	Adequate math skills
Basic pulmonary function testing	Organization and time management skills
Neonatal and pediatric care	Communication skills
Hemodynamics	Critical thinking skills
Home care equipment and procedures	
Pharmacology	
Pathophysiology	
Professional roles and functions	
Ethics	
Medical-legal aspects of practice	
Health promotion disease prevention	
Understanding of cost containment	
Microbiology	
Physics	
Chemistry	
Biology	

TABLE II

PSYCHOMOTOR DOMAIN KEY PSYCHOMOTOR AND CLINICAL SKILLS OF RCP 2000

Respiratory care implementation, planning and evaluation
Proficiency in basic therapeutics
Proficiency in ventilator management
Proficiency in respiratory mechanics
Proficiency in basic pulmonary function testing
Patient assessment skills
Blood gas sampling, analysis and quality control skills
Airway management skills
Patient education skills
Proficiency in infection control
Interview skills, patient oriented
Physical ability to do work

TABLE III

AFFECTIVE DOMAIN KEY ATTRIBUTES AND CHARACTERISTICS OF RCP 2000

Sensitivity to and respect for the needs of others
Dependability/reliability/responsibility/maturity
Flexibility
Willingness to learn (*)
Integrity
Ability to handle stress
Self-motivation (*)
Desire to help others
Interpersonal skills
Professionalism
Committment/dedication to profession
Determination/perseverance
Consciousness
Courtesy, tactfulness
Motivation for continued learning (*)
Ability to give and receive criticism
Self-directed learning skills (*)
Self-direction (*)
Compassionate, caring, empathy
Goal orientation (*)
Growth through educational activity (*)
Employment of learning (*)
Credentials (*)

Education for Adult Learners

There have been several learning factors identified in the education of adults. Six factors have been included to describe how these unique characteristics of adult learners pertain to respiratory care practitioners.

Andragogy

The concept of andragogy or "the art and science of helping adults learn" as Knowles (1970, p. 39) defines it can be traced back to 1833. The acceptance of this theory did not become popular until Malcolm Knowles introduced it in the 1970's. Andragogy has been based upon four critical assumptions and a key aspect of these assumptions includes the transition of the person from one life stage to another as the person matures. The four assumptions are as follows:

1. the self-concept moves from a dependent personality toward a self-directing personality

2. the accumulation of growing experience becomes an important resource for learning

3. the readiness to learn becomes more oriented to developmental tasks in social roles

4. the time perspective changes from one of postponed application of knowledge to immediate application with learning shifting from subject centeredness to problem centeredness

Using these four assumptions as a basis, educators have expanded their research to better understand who participates in

adult learning, why they participate in adult learning and how adults learn.

Participants in Learning

The individuals interested in adult education have been viewed as a pyramid of learners. In this pyramid, the bottom or base was comprised of self-directed learners and the top consisted of a small percentage of adult learners who pursued college credit by traditional and nontraditional programs (Cross, 1981).

Reasons for Learning

The research on the reasons why adults participate in learning has revealed that 55% of the respondents actively sought an education for knowledge goals and that approximately 64% pursued an education for job related reasons (Cross, 1981; U.S. Bureau, 1986). These results correspond with the life situations of adults. People who do not have good jobs, women entering the work force or professionals seeking advancement are more likely to be interested in acquiring an education. Unfortunately, there are also barriers to learning which have isolated adults from the learning process. These barriers have been divided into three categories; situational, institutional and dispositional.

Situational barriers are considered the greatest obstacles to learning. These originate from a person's situation in life at a certain time. The top situational barrier identified by potential students was cost, tuition, books, and child care. Institutional

barriers are methods that isolate or discourage working adults from continuing their education. The obstacle identified most frequently in this category was the unwillingness to go to school full time. The dispositional barriers are related to the learners attitudes and self-concept. The number one obstacle was the potential learners perception of being too old to learn. Table IV lists more detailed information which was obtained from a national survey conducted for the Commission on Non-Traditional Study (Carp, 1974; Cross, 1981). The percentages in Table IV represent the top five perceived barriers to learning identified by the respondents of the survey. One barrier or a combination of barriers had been selected as a deterrence to their continuing education. Therefore, the percentages do not add up to 100%.

Teaching/Learning Methods Utilized
by Learners

The research on the learning preferences and practice of adults has been identified in Table V. The percentages in Table V represent only the top five preferences in methods of learning. Therefore, the percentages do not add up to 100%. Two of these methods are self-directed learning and organized instruction. Self-directed learning has been defined as "deliberate learning in which the person's primary intention is to gain certain definite knowledge or skills" (Penland, 1979, p. 171). Adults utilizing this method are planning learning activities to meet their needs. These individuals have entered the education network with a problem centered

TABLE IV

PERCEIVED BARRIERS TO LEARNING

Barriers	Percent
Situational Barriers	
Cost, including tuition, books, child care	53
Not enough time	46
Home responsibilities	32
Job responsibilities	28
No child care	11
Institutional Barriers	
Do not want to got to school full time	35
Amount of time required to complete program	21
Courses are not scheduled conveniently	16
No information about offerings	16
Strict attendance requirements	15
Dispositional Barriers	
Student afraid they are too old	17
Low grades in the past, no confidence	12
Not enough energy and stamina	9
Tired of school, tired of classrooms	6
Hesitate to seem too ambitious	3

Source: Cross, K. P. and Carp, J. R. Planning Non-Traditional Programs: An Analysis of the Issues for Postsecondary Education. San Francisco, CA: Jossey-Bass, Inc., 1974. (Adapted by permission)

TABLE V

PERCENTAGES OF ADULT LEARNERS UTILIZING VARIOUS METHODS OF LEARNING

Method	Percentage
Lectures or classes	35
Study on my own, no formal instruction	17
On-the-job training, internships	14
Short-term conferences, workshops	8
Individual lessons from a private teacher	6

Source: Cross, K. P. and Carp. A. Planning Non-Traditional Programs: An Analysis of the Issues for Postsecondary Education. San Francisco, CA: Jossey-Bass, Inc., 1974. (Adapted by permission)

orientation to learning. The study conducted by Penland (1979) indicated that self-directed people:

1. want to set their own learning pace
2. use their own style of learning, and
3. wanted the learning strategy to be flexible and easy to change.

Even though the majority of self-directed learners want to maintain control over the direction of their learning, research has shown that self-planned learning involves more human interaction than classroom learning (National Institute, 1979).

Organized instruction has been an integral part of the definition of adult education. The National Center for Education Statistics (NCES) has defined adult education as "organized learning that involves a student-teacher relationship, in which the learner is supervised or directed in learning experiences over a specified period of time for a recognized purpose" (National Center, 1980, p. 3). This method of learning has assisted self-directed learners who cannot define what they want to know or when they need help in locating relevant sources.

Subject Matter Interests

The main subject matter sought by adult learners pertains to jobs or occupations (U.S. Bureau, 1986). Occupational training courses are taken by almost half of all adult learners who want to start a new career or upgrade their job options. This increase in professional education has been explained by the manpower shortage

and the recent growing need for continuing education in professions that wish to acquire and renew state licenses (Cross, 1981). The concepts of occupational and practical types of education have been linked with the four assumptions of andragogy described by Malcolm Knowles.

Competency Based Education

Adults have been classified as pragmatic learners, or individuals who seek knowledge about how to do something and then apply it as soon as possible (Cross, 1981). This description corresponds well with occupational education and the concept of competency-based education (CBE). This method of education has at its core, competencies or "tasks, skills, attitudes, values and appreciations that are deemed critical to success in life and/or in earning a living" (Finch, 1989, p. 242). The ability to do something has distinguished it from traditional instruction and it has been the learner's competence, not grading that has demonstrated a successful outcome for the learner. The CBE concept has also provided a means of meeting the needs of an individual within the instructional process. The self-directed method of individualized instruction has been utilized with CBE to facilitate learning and allow flexibility for the needs of the adult learner (Nystrom, 1977).

Survey Methods and Instruments

The process of conducting a needs assessment has been dependent upon choosing the correct tool or method for gathering data. The tools that can be used for collecting information include interviews, small group interactions, and surveys.

Needs Assessment

Rossett (1987, p. 62) said that, "needs assessment is the systematic effort that we make to gather opinions and ideas from a variety of sources on performance problems or new systems and technologies".

Constructing and Using Surveys and Questionnaires

The survey method can be used to solicit opinions on attitudes and feelings. Questionnaires or print surveys have been beneficial because;

1. a large number of people can be reached at a lower cost
2. anonymity can be assured
3. all respondents are asked the same questions in the same way
4. the respondents have time to consider their answers,
5. they are easier to score and analyze (Rossett, 1987).

A successful survey instrument has been dependent upon clearly stated instructions, asking the right questions, keeping the survey short and piloting the instrument (Sudman, 1983; Zemke, 1989). The cover letter serves as an introduction and a method of explaining

the directions associated with the survey. The questions have to directly relate to the subject matter and be arranged on the basis of the content of the subject. The two basic question types that have been used are the closed format and open-ended items. The closed format questions provide the respondent with a fixed set of options, whereas the open-ended questions do not narrow the range of possible responses.

Surveys or questionnaires have to be precise and concise. A key element in gathering data with a survey has been to insure survey return. Surveys that are long and difficult to answer will not be returned. Shorter surveys with questions that target information exactly have been more successful in terms of increased return rates and the obtainment of valuable data.

A jury process and pilot testing process has been utilized to clarify and refine survey instruments. The jury process has consisted of administering a questionnaire to a small group of other professionals who conduct needs assessments. These individuals have the ability to make specific suggestions for the improvements in the content and format of the questionnaire. The pilot testing process has consisted of selecting a small group of people who are similar to the intended target population and allow them to make suggestions concerning the questionnaire. After the jury and pilot testing process, adjustments are made to the survey instrument before they are distributed to the final sample of respondents.

Statistical Methods and Analysis

Zemke and Kramlinger (1989) suggested using the simplest statistics possible to insure practical results. Usually, a good job of problem analysis on surveys has been accomplished through simple descriptive statistics. Van Dalen (1979, p. 119) said that, "descriptive statistics make it possible to obtain a single numerical value that describes a whole set of data with respect to some distributional property or the relationship between two sets of data". The major types of descriptive statistics include frequency count, percentages, central tendency, measures of variability and measures of relationship. The central tendency measures mode, median and mean to determine the average or central value of a distribution of scores. Variability measures the variance and standard deviation about the mean. Measures of relationship like the correlation coefficient, describes the degree to which the scores on different variables are related (McCall, 1975).

The ability to build charts, graphs, tables and a good understanding of the gathered data has been an essential element in using surveys and questionnaires. These acquired skills have enabled researchers to determine the importance and significance of their assessments.

Summary

The prophetic work of John Naisbitt and Patricia Aburdene has demonstrated to the world the shift of America's economic role from an industrial society, to an informational society and currently to

a services society (Naisbitt, 1990). Research has shown a prediction of an increase in 13 million jobs in the services division's total economic growth in the U.S. for 1990 to 2005 (National Bureau, 1991). Included in this services division are the areas of health services which comprise 3.9 million jobs. The increased demand of health services workers has helped to create the current crisis in our nation's health care system. This crisis has caused a ripple effect on a myriad of areas in our economy. The expenditure in the GNP continues to increase in health care due to an aging population and an advancement in technology. The significant decrease in a younger population on one end of the spectrum and the increased demands for health care workers on the other end has created a 44% increase in the need for health services by the year 2005 (National Bureau, 1990). The public outcry for more accountability in the government's handling of money and the provision of health care to all citizens, galvanized a major private organization to research and prepare a report on strategies for change in the health care system. The PEW Health Professions Commission has mandated radical adjustments in the present system to slow down spiraling health care costs (PEW Health Professions, 1992). Within this framework of change, the Commission has advocated major restructuring of educational curriculum, to be flexible to individual's needs and to support licensure for all health care professionals to insure quality health care.

The AARC's task force on Professional Direction has been analyzing all the research on health care to determine the

influences it will have on the respiratory care profession. This task force has identified characteristics of a respiratory care practitioner in the year 2000. These characteristics have been incorporated into a new educational curriculum which will have to be implemented by all respiratory care educational programs. This restructuring includes new tasks and responsibilities which have been added to the current job matrix. The increase in professional tasks has translated to a probable expansion in the length of technician and therapist programs. The extension in the amount of time necessary to complete a respiratory care educational program and the major goal of the AARC to pursue licensure for all 50 states by 1995 will have an effect on the production of qualified practitioners to meet the demands in the health care workforce.

Research conducted in February by the "Oklahoma Society" (1991) identified 405 OJT's out of 1005 practitioners in Oklahoma that were uncredentialed. This data along with the vacancies already present in the workforce had resulted in 50% decrease in qualified respiratory care practitioners in Oklahoma. The state of Oklahoma had four traditional respiratory care educational programs available for training future practitioners (Joint Review Committee, 1991). The number of class positions were limited to 10 to 20 students per year. In addition, CAHEA had reported an average attrition rate of 50% for respiratory care educational programs across the nation. All these constraints have exacerbated the demand for qualified respiratory care personnel.

The accessibility to a respiratory care educational program for RCP OJT's in the state has been severely limited. If they wanted to become eligible for certification and licensure, the OJT's have had to conform to a traditional program setting, compete with individuals for class positions, learn with students who did not have prior experience, and jeopardize their family income.

The need for the proposed study has been a direct result in the chain of events surrounding the national health care crisis (PEW Health Professions, 1992). The accommodation of the adult learner, whose needs are unique and varied by a more flexible educational structure will become an essential piece in the puzzle that must be solved for America to provide qualified professional health care practitioners.

CHAPTER III

PROCEDURES

Design of the Study

The needs assessment for a self-paced respiratory therapy program for uncredentialed on-the-job trained RCP's in Oklahoma was prompted by a 1991 state-wide manpower survey conducted by the Oklahoma Society for Respiratory Care. This survey revealed that 405 out of 1005 practitioners were uncredentialed on-the-job trained RCP's who required additional education to become credentialed ("Oklahoma Society", 1991). Oklahoma had four respiratory care educational programs with limited enrollment to serve the prospective new students and the experienced uncredentialed on-the-job trained RCP's.

This was a descriptive study which employed a closed-format questionnaire and sought to accomplish the following objectives:

1. to determine how many of the 405 uncredentialed on-the-job trained RCP's in Oklahoma would participate in an educational program to obtain a certification credential.

2. to determine how many of the 405 uncredentialed on-the-job trained RCP`s in Oklahoma would participate in a traditional educational program to obtain a certification credential.

3. to determine how many of the 405 uncredentialed on-the-job trained RCP's in Oklahoma would participate in a self-paced

educational program to obtain a certification credential.

4. to determine how many of the 405 uncredentialed on-the-job trained RCP's would travel to Tulsa for orientation, final exams and a specialty rotation in neonatal intensive care or pulmonary function testing as part of the self-paced respiratory therapy technician certification educational program.

5. to determine how many of the 405 uncredentialed on-the-job trained RCP's would be eligible for advanced standing by the number of years experience.

6. to determine how many of the 405 uncredentialed on-the-job trained RCP's would be eligible for advanced standing by the types of experience.

7. to determine how many of the 405 uncredentialed on-the-job trained RCP`s would require financial aid.

8. to determine how many of the 405 uncredentialed on-the-job trained RCP's would be eligible for advanced standing by previous college course work in mathematics.

9. to determine how many of the 405 uncredentialed on-the-job trained RCP's would be eligible for advanced standing by previous college course work in the sciences.

Population

The population of this study was comprised of 405 uncredentialed on-the-job trained respiratory care practitioners in Oklahoma. These individuals were identified by the 1991 OSRC manpower survey that discerned the number of on-the-job trainees

according to cities in Oklahoma that had hospitals with respiratory care departments.

Sampling Procedures

The population of 405 uncredentialed on-the-job trained respiratory care practitioners was surveyed. This method was chosen for a more accurate representation of the specific characteristics of the population, the elimination of conscious and unconscious bias by the researcher, and as a number which could be analyzed without causing a limitation to the time and resources at the researcher's disposal (Key, 1992; Van Dalen, 1979).

Instrument Description

The survey instrument was juried twice by three people with expertise in survey design. These individuals are professors at the graduate level. The research instrument was pilot tested twice to insure its content, clarity, and ease of administration.

The first pilot test was given to three subject matter experts (SME's) in respiratory care. These individuals represented, a traditionally educated credentialed practitioner, an on-the-job trained credentialed practitioner and an on-the-job trained uncredentialed practitioner. This group critiqued the instrument for content validity. The results of this test were reviewed, ambiguous areas were eliminated and the format construction was corrected.

The second pilot test was administered in five hospitals in the Tulsa area that included 15 uncredentialed on-the-job trained RCP's.

These individuals were intended to represent a sample similar to the target population. This test group provided input for the validity of the instrument. These surveys were also reviewed and corrected. The final questionnaire was one page in length, contained 11 questions and took approximately five to ten minutes to complete. A copy of the questionnaire is included in Appendix B.

Data Gathering Procedures

A cover letter with the Tulsa Junior College letterhead, the questionnaire and a self-addressed stamped envelope was mailed on January 1, 1993 to 405 uncredentialed on-the-job trained RCP's in hospitals located throughout Oklahoma. The cover letter was included to introduce the survey, explain the purpose, insure confidentiality, instruct the participant in how to fill out the questionnaire and when to mail it back to Tulsa Junior College. A copy of this letter is included in Appendix A. The questionnaires were coded to identify each participant and still maintain their right of privacy.

A second letter was mailed to non-respondents on January 18, 1993 as a reminder to the participant to return the questionnaire by the deadline. A copy of this letter is included in Appendix A. Phone calls were also made as a follow-up to the second letter. The final date for the results to be included in the study was February 1, 1993.

Data Analysis Techniques

The instrument utilized was a descriptive closed-format questionnaire. The questionnaire items were reviewed, listed and summarized in chart form, utilizing simple frequency counts and percentages to indicate the need for a self-paced respiratory therapy technician certification program.

CHAPTER IV

FINDINGS

Demographic Data and Return Percentages

The population surveyed for this study was comprised of 405 uncredentialed on-the-job trained respiratory care practitioners in Oklahoma. These individuals were identified by the 1991 Oklahoma Society for Respiratory Care manpower survey that discerned the number of on-the-job trained respiratory care practitioners according to cities in Oklahoma that had hospitals with respiratory care departments. These cities were grouped into seven regions to obtain a summary of the total response rate for the state.

The return rate from these 405 uncredentialed on-the-job trained respiratory care practitioners was 100%. The initial cover letter and survey of January 1, 1993 yielded an 84% return rate. Another letter was sent January 18, 1993 to all 405 on-the-job trained respiratory care practitioners as a reminder to complete and mail in the survey. The second letter resulted in a return rate of 16% which brought the overall return rate up to 100%.

The return rates by city for the on-the-job trained respiratory care practitioners are presented in Tables VI through XI. Table XII summarizes the total response rate by region for the on-the-job trained respiratory care practitioners for the state.

TABLE VI

RESPONSE RATE FOR UNCREDENTIALED ON-THE-JOB TRAINED RCP BY CITY IN THE NORTHEAST REGION

CITY	NUMBER DISTRIBUTED	NUMBER RESPONDING
Bartlesville	12	12
Blackwell	2	2
Bristow	2	2
Claremore	5	5
Cleveland	3	3
Cushing	3	3
Drumright	2	2
Fairfax	3	3
Grove	1	1
Henryetta	3	3
Miami	2	2
Muskogee	11	11
Okmulgee	3	3
Pawhuska	2	2
Pawnee	1	1
Perry	1	1
Ponca City	4	4
Pryor	3	3
Sallisaw	3	3
Salpulpa	3	3
Stillwater	1	1
Stillwell	2	2
Stroud	1	1
Tahlequah	4	4
Vinita	1	1
Wagoner	1	1
Total	80	80

The total response rate was 100%.

TABLE VII

RESPONSE RATE FOR UNCREDENTIALED ON-THE-JOB TRAINED RCP BY CITY IN THE NORTHWEST REGION

CITY	NUMBER DISTRIBUTED	NUMBER RESPONDING
Beaver	1	1
Boise City	2	2
Enid	11	11
Guymon	4	4
Kingfisher	2	2
Okeene	2	2
Woodward	4	4
Total	26	26

The total response rate was 100%.

TABLE VIII

RESPONSE RATE FOR UNCREDENTIALED ON-THE-JOB TRAINED RCP BY CITY IN THE SOUTHWEST REGION

CITY	NUMBER DISTRIBUTED	NUMBER RESPONDING
Altus	5	5
Anadarko	2	2
Chickasha	5	5
Clinton	5	5
Duncan	1	1
Elk City	1	1
Hobart	3	3
Lawton	15	15
Mangum	1	1
Waurika	4	4
Total	42	42

The total response rate was 100%.

TABLE IX

RESPONSE RATE FOR UNCREDENTIALED ON-THE-JOB TRAINED RCP BY CITY IN THE SOUTHEAST REGION

CITY	NUMBER DISTRIBUTED	NUMBER RESPONDING
Ada	9	9
Antlers	3	3
Ardmore	13	13
Atoka	1	1
Durant	1	1
Eufaula	2	2
Holdenville	1	1
Idabel	6	6
Madill	2	2
McAlester	2	2
Pauls Valley	2	2
Poteau	1	1
Purcell	2	2
Seminole	4	4
Shawnee	6	6
Stigler	3	3
Sulphur	2	2
Wilburton	1	1
Total	61	61

The total response rate was 100%.

TABLE X

RESPONSE RATE FOR UNCREDENTIALED ON-THE-JOB TRAINED RCP FOR THE TULSA REGION

CITY	NUMBER DISTRIBUTED	NUMBER RESPONDING
Broken Arrow	1	1
Tulsa	7	7
	25	25
	5	5
	15	15
	38	38
Total	91	91

The total response rate was 100%.

TABLE XI

RESPONSE RATE FOR UNCREDENTIALED ON-THE-JOB TRAINED RCP IN THE OKLAHOMA CITY REGION

CITY	NUMBER DISTRIBUTED	NUMBER RESPONDING
Bethany	2	2
Edmund	2	2
El Reno	2	2
Guthrie	3	3
Midwest City	6	6
Moore	2	2
Norman	2	2
Oklahoma City	86	86
Total	105	105

The total response rate was 100%.

TABLE XII

RESPONSE RATE FOR UNCREDENTIALED ON-THE-JOB TRAINED RCP FOR THE STATE OF OKLAHOMA

REGION	NUMBER DISTRIBUTED	NUMBER RESPONDING
Northeast	80	80
Northwest	26	26
Southeast	61	61
Southwest	42	42
Tulsa	91	91
Oklahoma City	105	105
Total	405	405

The total response rate was 100%.

Description of the Important Findings

The questionnaire listed ten different questions that the on-the-job trained respiratory care practitioner was requested to answer. These questions were designed to gather data which could be analyzed to answer the objectives of the study.

The first question asked if the respondent, would need an educational program to obtain a certification credential. The results for this question were yes for 405 respondents. Table XIII illustrates by region that all respondents needed some form of educational program to achieve a certification credential.

The second question asked if the respondent, would choose a traditional full-time respiratory therapy educational program to obtain a certification credential. The results of this question were no for all 405 respondents. Table XIV indicates by region that all 405 respondents did not need a traditional respiratory therapy education program.

The third question asked if the respondent, would choose a self-paced respiratory therapy education program to obtain a certification credential. The results for this question were yes for all 405 respondents. Table XV demonstrates by region that all respondents needed a self-paced respiratory therapy education program.

The fourth question asked if the respondent, would participate in a two day orientation meeting at the beginning of a semester and a one day final exam at the end of the semester at the Tulsa Junior

TABLE XIII

RESPONDENTS BY REGION NEEDING A RESPIRATORY THERAPY EDUCATIONAL PROGRAM TO OBTAIN CERTIFICATION

REGION	NUMBER NEEDING R.T. PROGRAM	NUMBER NOT NEEDING R.T. PROGRAM	NUMBER RESPONDING
Northeast	80	0	80
Northwest	26	0	26
Southeast	61	0	61
Southwest	42	0	42
Tulsa	91	0	91
Oklahoma City	105	0	105
Total	405	0	405

TABLE XIV

RESPONDENTS BY REGION NEEDING A TRADITIONAL FULL-TIME RESPIRATORY THERAPY EDUCATIONAL PROGRAM TO OBTAIN CERTIFICATION

REGION	NUMBER NEEDING TRAD. PROGRAM	NUMBER NOT NEEDING TRAD. PROGRAM	NUMBER RESPONDING
Northeast	0	80	80
Northwest	0	26	26
Southeast	0	61	61
Southwest	0	42	42
Tulsa	0	91	91
Oklahoma City	0	105	105
Total	0	405	405

TABLE XV

RESPONDENTS BY REGION NEEDING A SELF-PACED RESPIRATORY THERAPY EDUCATIONAL PROGRAM TO OBTAIN CERTIFICATION

REGION	NUMBER NEEDING SELF-PACED PROG.	NUMBER NOT NEEDING SELF-PACED PROG.	NUMBER RESPONDING
Northeast	80	0	80
Northwest	26	0	26
Southeast	61	0	61
Southwest	42	0	42
Tulsa	91	0	91
Oklahoma City	105	0	105
Total	405	0	405

College Metro campus. The results of this question were yes for 405 respondents. Table XVI shows by region that all respondents would be willing to attend an orientation and final exam at Tulsa Junior College.

The fifth question asked if the respondent, would you travel to Tulsa for a five day specialty rotation in a neonatal intensive care or pulmonary function laboratory. The results of this question were yes for all 405 respondents. Table XVII indicates by region that all respondents would be willing to travel to Tulsa for a five day specialty rotation.

The sixth question asked if the respondent, would need financial aid to enroll in the self-paced program. The results for this question were 308 out of the 405 respondents or 76% answered yes and 97 or 24% answered no. Table XVIII illustrates the differences by region. The majority of the respondents expressed a need for financial aid to enroll in the self-paced program.

The seventh question asked how long the respondent had worked in the field of respiratory therapy. The results of this question were sub-divided into five year increments up to 20 years. The results revealed that 196 out of 405 respondents or 48.395% have 0-5 years experience, 71 or 17.531% have 5-10 years experience, 75 or 18.519% have 10-15 years experience, 32 or 7.901% have 15-20 years experience and 31 or 7.654% have over 20 years experience. Table XIX demonstrates by region that 48% of the respondents have 0-5 years of experience in the field of respiratory therapy.

TABLE XVI

RESPONDENTS BY REGION WHO WOULD PARTICIPATE IN A TWO-DAY ORIENTATION AND A ONE DAY FINAL EXAM EVERY SEMESTER AT TULSA JUNIOR COLLEGE

REGION	NUMBER WILLING TO PARTICIPATE IN ORIENTATION	NUMBER NOT WILLING PARTICIPATE IN ORIENTATION	NUMBER RESPONDING
Northeast	80	0	80
Northwest	26	0	26
Southeast	61	0	61
Southwest	42	0	42
Tulsa	91	0	91
Oklahoma City	105	0	105
Total	405	0	405

TABLE XVII

RESPONDENTS BY REGION WHO WOULD TRAVEL TO TULSA FOR A FIVE DAY SPECIALTY ROTATION IN NICU OR PFT

REGION	NUMBER WILLING TO TRAVEL TO TULSA	NUMBER NOT WILLING TO TRAVEL TO TULSA	NUMBER RESPONDING
Northeast	80	0	80
Northwest	26	0	26
Southeast	61	0	61
Southwest	42	0	42
Tulsa	91	0	91
Oklahoma City	105	0	105
Total	405	0	405

TABLE XVIII

RESPONDENTS BY REGION NEEDING FINANCIAL AID
TO ENROLL IN A SELF-PACED PROGRAM

REGION	NUMBER NEEDING FINANCIAL AID	NUMBER NOT NEEDING FINANCIAL AID	NUMBER RESPONDING
Northeast	63	17	80
Northwest	19	7	26
Southeast	45	16	61
Southwest	30	12	42
Tulsa	64	27	91
Oklahoma City	87	18	105
Total	308	97	405

TABLE XIX

RESPONDENTS BY REGION AND YEARS OF EXPERIENCE

REGION	0-5 YEARS	5-10 YEARS	10-15 YEARS	15-20 YEARS	OVER 20 YEARS	NUMBER RESPONDING
Northeast	41	13	13	8	5	80
Northwest	6	12	3	2	3	26
Southeast	26	10	19	4	2	61
Southwest	28	0	10	2	2	42
Tulsa	48	15	12	7	9	91
Oklahoma City	47	21	18	9	10	105
Total	196	71	75	32	31	405

The eighth question asked the respondents to check their areas of experience in the field of respiratory therapy. The results of this question were sub-divided into seven parts. The respondents revealed that 386 or 95.30% have experience in basic respiratory therapy, that 359 or 88.63% have experience in intensive care units, and that 35 or 8.64% have experience in neonatal/pediatrics. The respondents also revealed that 149 or 36.79% have experience in pulmonary function testing, 105 or 25.92% have experience with electrocardiograms, 32 or 7.90% have homecare experience and that 4 or .9876% have experience in other areas. These other areas may include transport, hyperbaric medicine or assisting physicians with bronchoscopies and cardiovascular diagnostics. Table XX shows by region that the uncredentialed on-the-job trained respiratory care practitioners had more experience in basic respiratory therapy and intensive care units.

The ninth question asked the respondents if they had completed any college mathematics courses. The results of this question were 200 or 49.383% responded yes and 205 or 50.617% responded no. Table XXI illustrates by region that approximately 50% of the respondents have had some college mathematics courses.

The tenth question asked the respondents if they had completed any college science courses. The results of this question were 205 or 50.617% responded yes and 200 or 49.383% responded no.

TABLE XX

RESPONDENTS BY REGION AND AREAS OF EXPERIENCE*

REGION	BASIC R.T.	ICU	NEO/ PEDS	PFT	EKG	HOME CARE	OTHER	NUMBER RESPONDING
Northeast	62	56	9	27	20	5	1	80
Northwest	49	43	0	23	17	6	0	26
Southeast	64	64	7	29	20	7	1	61
Southwest	23	20	0	18	7	1	0	42
Tulsa	85	79	10	21	19	6	1	91
Oklahoma City	103	97	9	31	22	7	1	105
Total	386	359	35	149	105	32	4	405

* Percentage and numerical counts will not correspond to 100% or the number of respondents since RCP may work in more than one area.

TABLE XXI

RESPONDENTS BY REGION AND BY COLLEGE LEVEL MATHEMATICS COURSES COMPLETED

REGION	COLLEGE MATH COURSES	NO COLLEGE MATH COURSES	NUMBER RESPONDING
Northeast	40	40	80
Northwest	14	12	26
Southeast	28	33	61
Southwest	21	21	42
Tulsa	43	48	91
Oklahoma City	54	51	105
Total	200	205	405

Table XXII indicates by region that more than 50% of the respondents have had some college science courses.

TABLE XXII

RESPONDENTS BY REGION AND BY COLLEGE LEVEL SCIENCE COURSES COMPLETED

REGION	COLLEGE SCIENCE COURSES	NO COLLEGE SCIENCE COURSES	NUMBER RESPONDING
Northeast	39	41	80
Northwest	14	12	26
Southeast	30	31	61
Southwest	24	18	42
Tulsa	44	47	91
Oklahoma City	54	51	105
Total	205	200	405

CHAPTER V

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

Introduction

The study was prompted by a 1991 state-wide manpower survey conducted by the Oklahoma Society for Respiratory Care. This survey revealed that 405 out of 1005 on-the-job trained respiratory care practitioners were uncredentialed and trained on-the-job. The national association for respiratory care has proposed that all respiratory care practitioners will be credentialed by 1995. Forty percent of the current practitioners in Oklahoma have not yet been credentialed. Therefore, these individuals would require additional education through an American Medical Association (AMA) approved respiratory therapy school to be eligible for a credential.

The purpose of the study was to determine whether a self-paced respiratory therapy program would be a viable alternative to achieving a respiratory therapy technician certification credential. A descriptive study in the form of a closed-format questionnaire was utilized to accomplish the following objectives of this study:

1. To determine how many of the 405 uncredentialed on-the-job trained respiratory care practitioners in Oklahoma would participate in an educational program to obtain a certification credential.

2. To determine how many of the 405 uncredentialed on-the-job trained respiratory care practitioners in Oklahoma would participate in a traditional educational program to obtain a certification credential.

3. To determine how many of the 405 uncredentialed on-the-job trained respiratory care practitioners in Oklahoma would participate in a self-paced educational program to obtain a certification credential.

4. To determine how many of the 405 uncredentialed on-the-job trained respiratory care practitioners in Oklahoma would travel to Tulsa for orientation, final exams and a specialty rotation in neonatal intensive care or pulmonary function testing as part of a self-paced respiratory therapy technician certification educational program.

5. To determine how many of the 405 uncredentialed on-the-job trained respiratory care practitioners would be eligible for advanced standing by their number of years experience.

6. To determine how many of the 405 uncredentialed on-the-job respiratory care practitioners would be eligible for advanced standing by their types of experience.

7. To determine how many of the 405 uncredentialed on-the-job trained respiratory care practitioners would require financial aid.

8. To determine how many of the 405 uncredentialed on-the-job trained respiratory care practitioners would be eligible for advanced standing by previous college course work in mathematics.

9. To determine how many of the 405 uncredentialed on-the-job trained respiratory care practitioners would be eligible for advanced standing by previous college course work in the sciences.

Summary of Findings

A summary of responses to the questionnaire returned by 405 uncredentialed on-the-job trained respiratory care practitioners indicates that all of the uncredentialed respiratory care practitioners in the state would need a respiratory therapy education program for obtaining a certification credential and that a self-paced format is the preferred method of learning. All respondents were willing to travel to Tulsa Junior College for orientation, special clinical rotations and for examinations. The majority of the respondents or 76% expressed a need for financial aid in order to enroll in a self-paced program. The majority of the uncredentialed respiratory care practitioners surveyed had zero to five years of experience and the main areas of work experience were in basic respiratory therapy and intensive care units. Approximately 50% of the uncredentialed respiratory care practitioners had acquired some college mathematics and science courses. Figure 6 graphically depicts a summary of the data collected through the questionnaire.

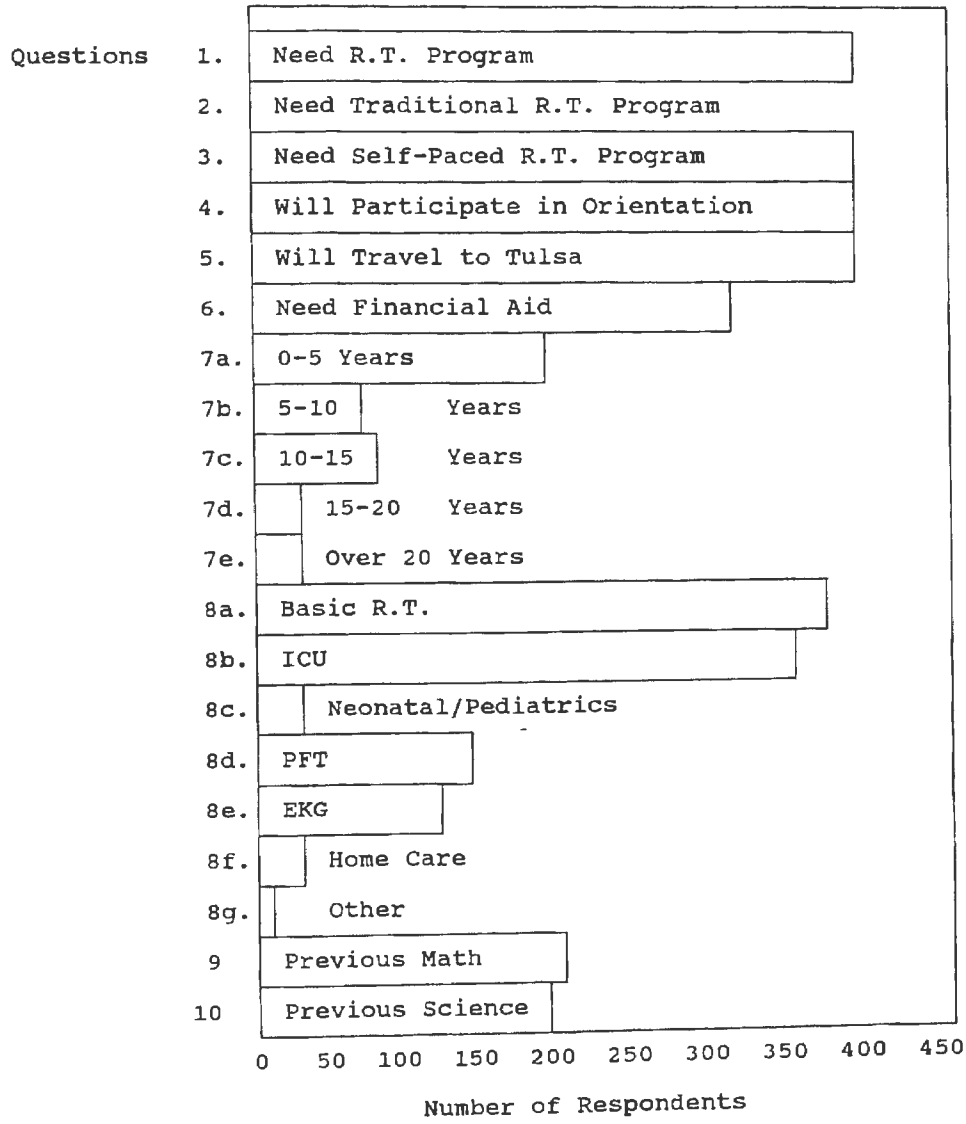

Figure 6. Summary of Responses to the Questionnaire by Uncredentialed On-The-Job Trained Respiratory Care Practitioners

Conclusions

The following conclusions were based upon the data that was collected, the relationship of the data to the review of literature, the problem statement and the solution to the problem. The first conclusion derived from the study was that a definite need existed for a respiratory therapy educational program for uncredentialed on-the-job trained respiratory care practitioners. All 405 uncredentialed practitioners surveyed expressed a need for a self-paced respiratory therapy program. The information obtained from questions one, two, three, four and five correspond with the key assumptions that are manifested in the theory of andragogy (Knowles, 1970). The adult learner ranges from being self-directed to the other end of the spectrum of pursuing college credit by traditional and non-traditional methods. According to Penland (1979) self-directed people want to set their own learning pace, want to use their own style of learning and want the learning strategy to be flexible and easy to change. Penland (1979) has shown that adults participate in learning because they are experiencing difficulties in coping with life problems.

The data collected for questions four, five and six has reinforced the findings of studies conducted by Cross (1981). She has identified difficulties with life problems as life situations which create obstacles or impede an adult's progress in lifelong learning. Most of the life situations were catalysts for seeking knowledge to obtain a new job or to advance in an established career. These obstacles or barriers to learning are of

three types, situational, institutional and dispositional. Table IV (see Chapter II, pp. 31) lists the top five perceived barriers to learning for each type.

The situational barrier most identified in Cross' research was financial need. This information agrees with question number six of the survey where 76% of the respondents indicated a need for financial assistance.

An adult who has been denied access to a program that provides the education necessary to reach a learning goal is an example of an institutional barrier. This corresponds with question number two of the survey. The uncredentialed on-the-job trained respiratory care practitioners have been isolated from attending a respiratory therapy educational program in the state because all the programs were in a traditional format. The process of reducing the number of times an adult has to be on campus provides a more flexible approach to meeting adult learners needs and parallels Penland's research on adult teaching/learning methods (Penland, 1979).

Table IV also indicates that the top dispositional learning barrier was a student's perception of being too old to learn. Question seven of the survey seemed to indicate that this barrier did not exist. The survey showed that 100% of the uncredentialed practitioners wanted to participate in a self-paced respiratory therapy education program, even though 34% of the respondents had ten or more years of experience in the field of respiratory therapy.

The second conclusion was that all respondents would be flexible in their educational pursuits. This was demonstrated in

questions four and five of the survey by their willingness to travel to Tulsa each semester for an orientation to classes, for attendance in specialty rotations, such as neonatal/pediatrics and to complete semester examinations.

The third conclusion was based upon the answers of the respondents to questions seven. The results showed that approximately 50% of the uncredentialed practitioners had more than five years experience in the field of respiratory therapy. This would indicate a need for some form of accelerated pathway and/or advanced-standing segment to an educational program which would allow the student to reach their goal in a timely manner. The results also showed that approximately 50% of the uncredentialed practitioners had less than five years experience. This would indicate a need for a more structured framework than previously discussed, but still flexibility framework in terms of providing a non-traditional form of learning.

The fourth conclusion was based upon question eight which deals with the variety of experiences encountered by the uncredentialed practitioners. This question revealed that 386 and 359 respectively, out of 405 respondents had experience in basic respiratory therapy and intensive care units. This indicates that the majority of uncredentialed practitioners have a greater variety in experiences, and therefore will have a greater need for an accelerated pathway and/or advanced standing-segment.

The fifth conclusion addresses questions nine and ten whose results have shown that approximately 50% of the respondents

have had some college mathematics and science courses while about 50% have not. The respondents with previous college mathematics and science courses will require an accelerated pathway and/or advanced standing segment. The respondents with no previous courses will also be able to benefit from a structured but flexible non-traditional educational program.

The overall conclusion of this study was that the concept of the self-paced respiratory therapy technician educational program would be a vehicle by which the respondents would be able to achieve a certification credential in the field of respiratory therapy. This has been demonstrated by the significant need expressed in question three by all 405 uncredentialed on-the-job trained respiratory care practitioners.

Recommendations

The recommendations for this study are as follows:

1. A proposal should be developed from this study to justify a self-paced respiratory therapy technician certification educational program at one of the four state institutions.

2. A self-paced respiratory therapy technician certification educational program should be designed with a flexible schedule to accommodate the various needs of adult learners.

3. A self-paced respiratory therapy technician educational program should be designed with an accelerated pathway and advanced standing segment components to the curriculum.

4. A packet of information along with counseling and guidance should be made available to adult learners who require financial assistance.

5. A follow-up study should be conducted with Respiratory Therapy Department Directors in the state to determine what financial and technical support is available from the various hospitals for the uncredentialed on-the-job trained respiratory care practitioners.

6. A follow-up study should be conducted to ascertain the profile of a successful non-traditionally trained certified respiratory care practitioner.

7. The methodology utilized in this study can be used by other respiratory therapy educators for further research.

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APPENDIXES

APPENDIX A

COVER LETTERS

Tulsa Junior College

(918) 631-7000

January 1, 1993

Dear

The Respiratory Therapy Program at Tulsa Junior College is investigating the possibility of establishing a Self-Paced Respiratory Therapy Entry-Level Program for individuals who are on-the-job trainees in respiratory therapy.

A Self-Paced Program is a way of providing certification eligibility for individuals who cannot attend a Respiratory Therapy school during the day, five days a week. In order to determine the feasibility of this type of program we want to know if you would need a flexible Respiratory Therapy education format.

I have enclosed a short questionnaire. Would you please take a few minutes to complete this survey and return it to me by February 1, 1993. A stamped, self-addressed envelope is enclosed for your convenience. Confidentiality will be carefully guarded.

The research findings should be available by May 1, 1993. Call or write me if you would like to know the results of this survey.

Your assistance in this research will be deeply appreciated.

Sincerely,

Becki L. Evans BA, RRT
Assistant Professor
Respiratory Therapy Program
Tulsa Junior College

Enclosures - 2

CENTRAL OFFICE
6111 East Skelly Drive
Tulsa, Oklahoma 74135-6198

METRO CAMPUS
909 South Boston Avenue
Tulsa, Oklahoma 74119-2095

NORTHEAST CAMPUS
3727 East Apache
Tulsa, Oklahoma 74115-3151

SOUTHEAST CAMPUS
10300 East 81st Street
Tulsa, Oklahoma 74133-4513

Tulsa Junior College

CENTRAL OFFICE
6111 East Skelly Drive
Tulsa, Oklahoma 74135-6198
(918) 622-5100

METRO CAMPUS
909 South Boston Avenue
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(918) 587-6561

NORTHEAST CAMPUS
3727 East Apache
Tulsa, Oklahoma 74115-3151
(918) 834-5071

SOUTHEAST CAMPUS
10300 East 81st Street
Tulsa, Oklahoma 74133-4513
(918) 250-9581

January 18, 1993

Dear

Recently, you received a questionnaire concerning a Self-Paced Respiratory Therapy Entry-Level Program for on-the-job trainees. I would like to be able to include your opinion in the research results.

Would you please take a few minutes to complete this questionnaire? Then, mail it back in the stamped, self-addressed envelope.

Thank you for your time and cooperation.

Sincerely,

Becki L. Evans BA, RRT
Assistant Professor
Respiratory Therapy Program
Tulsa Junior College

APPENDIX B

QUESTIONNAIRE

TULSA JUNIOR COLLEGE
SELF-PACED RESPIRATORY THERAPY ENTRY-LEVEL PROGRAM
QUESTIONNAIRE

A Self-Paced Respiratory Therapy Entry-Level Program would allow on-the-job trained respiratory care practitioners with two years of respiratory therapy experience to become certification eligible by completing their studies at home and where they work.
The following questions are important in identifying how many on-the-job trained respiratory care practitioners would need a self-paced entry-level program. Would you please complete this questionnaire and return it by February 1, 1993 in the enclosed stamped, self-addressed envelope? Thank you.

---

1. Would you need a respiratory therapy educational program to obtain a certification credential?

   ☐ YES ☐ NO

2. Would you need a traditional full-time, respiratory therapy educational program to obtain a certification credential?

   ☐ YES ☐ NO

3. Would you need a self-paced respiratory therapy educational program to obtain a certification credential?

   ☐ YES ☐ NO

4. Would you participate in a two day orientation meeting at the beginning of a semester and a one day final exam at the end of the semester at the Tulsa Junior College Metro campus?

   ☐ YES ☐ NO

5. Would you travel to Tulsa for a five day specialty rotation in a neonatal intensive care unit or a pulmonary function laboratory?

   ☐ YES ☐ NO

6. Would you need financial aid to enroll in the self-paced program?

☐ YES ☐ NO

7. How long have you worked in the field of respiratory therapy?

☐ 0 - 5 years ☐ 15 - 20 years

☐ 5 - 10 years ☐ Over 20 years

☐ 10 - 15 years

8. Please check your area(s) of experience.

☐ Basic Respiratory Therapy

☐ Intensive Care Unit

☐ Neonatal/Pediatrics

☐ Pulmonary Function Testing

☐ Electrocardiogram

☐ Homecare

☐ Other _____

9. Have you completed any college mathematics courses?

☐ YES ☐ NO

10. Have you completed any college science courses?

☐ YES ☐ NO

If you answered yes to questions #9 and #10, please list the courses below.

_____

_____

11. Do you have any additional information that would help us in developing a self-paced program?

_____

_____

Thank you for your assistance with this survey.

APPENDIX C

INSTITUTIONAL REVIEW BOARD APPROVAL

IRB # ED-93-033

APPLICATION FOR REVIEW OF HUMAN SUBJECTS RESEARCH
(PURSUANT TO 45 CFR 46)
OKLAHOMA STATE UNIVERSITY INSTITUTIONAL REVIEW BOARD

Title of project (please type): A Needs Assessment for a Self-Paced Respiratory Therapy Program for On-The-Job Trainees in Oklahoma

Please attach copy of project proposal.

I agree to provide the proper surveillance of this project to ensure that the rights and welfare of the human subjects are properly protected. Additions to or changes in procedures affecting the subjects after the project has been approved will be submitted to the committee for review.

PRINCIPAL INVESTIGATOR(S): (If student, list advisor's name first)

Typed Name	Signature
Dr. Robert E. Nolan	
Becki L. Evans	

Occupational and Adult Education — Department
Oklahoma State University — College

414 Classroom Building — Faculty Member's Campus Address
(405) 744-6275 — Campus Phone Number

TYPE OF REVIEW REQUESTED: [x] EXEMPT [ ] EXPEDITED [ ] FULL BOARD
(Refer to OSU IRB Information Packet or the OSU IRB Brochure for an explanation of the types of review.)

1. Briefly describe the background and purpose of the research.
A 1991 state-wide manpower study conducted by the Oklahoma Society for Respira Care revealed that 40% of the practitioners were on-the-job trainees who require additional education to be credentialed. The purpose is to conduct a study to identify how many on-the-job trainee respiratory care practitioners in Oklahoma would need a self-paced entry-level educational program. The results of this study would then be utilized to justify a new program in the Allied Health Division of Tulsa Junior College.

VITA

Rebecca Lynn Evans

Candidate for the Degree of

Master of Science

Thesis: A NEEDS ASSESSMENT FOR A SELF-PACED RESPIRATORY THERAPY PROGRAM FOR ON-THE-JOB TRAINEES

Major Field: Occupational and Adult Education

Biographical:

Personal Data: Born in Omaha, Nebraska, August 3, 1951, the daughter of Nicholas and Genevieve Barna.

Education: Received Bachelor of Arts Degree in Education from Ottawa University at Ottawa in May, 1984: completed requirements for the Master of Science degree at Oklahoma State University in May, 1993.

Professional Experience: Certified Respiratory Therapy Technician, Archbishop Bergan Mercy Hospital, Omaha, Nebraska: 1971-75: Certified Respiratory Therapy Technician, Veterans Administration Medical Center, Omaha, Nebraska; 1975-78: Registered Respiratory Therapist - Instructor, Southeast Community College, Lincoln, Nebraska, 1978-82: Clinical/Educational Coordinator, Muskogee Regional Medical Center, Muskogee, Oklahoma, 1982-84: Director of Respiratory Services Department, Muskogee Regional Medical Center, Muskogee, Oklahoma, 1984: Assistant Professor, Respiratory Therapy Program, Tulsa Junior College, Tulsa, Oklahoma, 1986-present.

Professional Organizations: American Association for Respiratory Care; Oklahoma Society for Respiratory Care; American Heart Association; American Lung Association; American Vocational Association; Association of Supervision and Curriculum Development; Tri-Beta Biological Honorary Society.