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An Assessment of Associate Degree Radiography Programs in Virginia: Comparison Between Traditional and Nontraditional Students

Ron E. Proffitt
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AN ASSESSMENT OF ASSOCIATE DEGREE

RADIOGRAPHY PROGRAMS IN VIRGINIA:

COMPARISON BETWEEN

TRADITIONAL AND NON-TRADITIONAL STUDENTS

A Dissertation

Presented to

the Faculty of the Department of

Educational Leadership and Policy Analysis

East Tennessee State University

In Partial Fulfillment

of the Requirements for the Degree

Doctor of Education

by

Ron E. Proffitt

May 1998
APPROVAL

This is to certify that the Graduate Committee of

Ron E. Proffitt

met on the

24th day of March, 1998.

The committee read and examined his dissertation, supervised his defense of it in an oral examination, and decided to recommend that his study be submitted to the Graduate Council, in partial fulfillment of the requirements for the degree of Doctorate of Education.

Signed on behalf of

the Graduate Council

Interim Dean, School of Graduate Studies

Chair, Graduate Committee
ABSTRACT

AN ASSESSMENT OF ASSOCIATE DEGREE RADIOGRAPHY PROGRAMS IN VIRGINIA: COMPARISON BETWEEN TRADITIONAL AND NON-TRADITIONAL STUDENTS

by

Ron E. Proffitt

The increase of non-traditional students in higher education has been a topic of discussion and examination for over a decade. This study compared the non-traditional student with the traditional student in radiography programs in Virginia’s community colleges.

The purpose of this study was to determine if differences exist between traditional and non-traditional student performance in a structured radiography program. The study hypothesized that there were no differences in academic performance, national board examination scores, and program completion. Focus-group interviews examined themes related to success factors.

t-Test analysis indicated significant differences in academic success between traditional and non-traditional learners. Non-traditional learners experienced greater success. Chi-square analysis did not show a significant difference between the traditional and non-traditional students in graduation rate and scores on the American Registry of Radiologic Technologist (ARRT) national examination.

Findings in this study could serve as a baseline for further study regarding non-traditional and traditional student success in radiography programs.
DEDICATION

The dedication of this dissertation is to the most important people in my life. To my wife, Helen, who has always been by my side. I love you and owe you the deepest of gratitude for being my wife and friend. Your hard work in support of our family has made it possible for me to complete this dissertation. I pledge my love to you forever.

To my children, Katrina, Chris, and Olivia, who are three special people. You each have your own distinct personality and way of encouraging me. To my daughters Katrina and Olivia who are a source of pride and joy: Thank you Katrina for giving me such a wonderful grandson as Timothy. He is more than special to me. Thank you Olivia for the light hearted nature you exhibit that has helped me laugh when I was down during this project. It's a special gift you have. To my son, a friend and confident as well. Thank you Chris, your constant encouragement and assistance in this project made it possible.

A father could not have a better son and friend.

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Last to the memory of my father and in honor of my mother.

Dad, a man who had little formal education but had the wisdom of Solomon. You provided me the most important values of life: A role model that had integrity, fortitude, and sound spiritual values. Mom, you are one special lady. Thank you for loving my family and encouraging Helen and me so often. You will never know how much we all love you.
ACKNOWLEDGMENTS

The completion of this work would not have been possible without the aid and encouragement of my dissertation committee. My deepest appreciation to Dr. Terrance Tollefson, Dr. Marie Hill, Dr. Edirisooriya, and Dr. Blankenship.

I also want acknowledge my friends and colleagues at Southwest Virginia Community College. Their assistance to me during the past three years made this project possible. To Mike, Rickie, and Tammy a special thank you for being good friends. To all my friends who provided encouragement, Thank you!
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CHAPTER 1
INTRODUCTION

Community colleges, along with other institutions of higher education, face increasing challenges to survive and maintain educational quality. The decline in enrollment of traditional-age students in the 1990s increased competition among universities, private colleges, and community colleges. Enrollment of traditional-age students peaked in 1979 and has continued to decline (Cohen & Brawer, 1996). The result is fewer traditional-age students available for enrollment in postsecondary education today. This fact, together with pressures from reduced or capped funding, a market place with increasing tuition cost, and greater state and federal scrutiny, make it necessary for educational institutions to give attention to enrollment figures for survival (Hines, 1988; Powers & Redding, 1995).

At the same time these restraints and pressures are being felt, the socioeconomic climate is changing. The nation is moving from an industrial society to an information or service society. This social and
economic change affects the so-called blue-collar worker as well professional occupations. The type and nature of work change rapidly in today’s society. Change then dictates retraining and even total new directions or careers for some individuals. Individuals entering the work force for the first time can expect to change jobs 8 to 10 times in the first 10 to 15 years of their careers (Fields, 1997). This climate of change brings more adult students back to school (Shankar, 1994). Community colleges are considered to be the primary source for responding to workforce needs (Boone, 1997).

These changes, coupled with the growing population of older adults, have brought a growing population of non-traditional students to college campuses across the country. The life focus and responsibilities of these individuals cause them to bring a different perspective, attitude, and style of learning to the classroom. Their everyday responsibilities and routines for living are distinctly different from traditional students. Non-traditional students have a different set of characteristics (Solomon & Gordon, 1981). They may be displaced executives or other workers with whole sets of different
characteristics, values, and needs than their traditional counterparts. Their motivation for learning often differs from that of traditional students. Likewise, the time available to spend in study is frequently less for the non-traditional students (Solomon & Gordon). Kerka (1995) reported that non-traditional students are more involved in community life than in campus life and have stronger ties to career culture than to academic culture; consequently, non-traditional students face more problems associated with job, family, and other factors associated with adult living.

A projection in 1980 predicted that by the year 2000 there would be more than 20 million non-traditional students enrolled in higher education (Hughes, 1983). In 1994 non-traditional adult students accounted for 50% of students enrolling in higher education (Kerka, 1995).

Community colleges are excellent resources for meeting the needs of a growing population of non-traditional students in higher education. Three factors favor the community college. First, in the spring of 1989, 43% of undergraduates and 47% of minority students were enrolled in community colleges. Community colleges enroll over 43% of higher education students (The Nation, 1996). Community
colleges enroll significant numbers of non-traditional students who are seeking retraining and better jobs. Healthcare programs have been high on the list of choices for these students. Radiography, for example, was projected by the Bureau of Labor Statistics to grow by 65% from 1986 to the year 2000 (Institute of Medicine, 1989). Although growth has not been at this projected pace, interest remains high in radiography as a career choice.

Second, access to college is a key factor for non-traditional students. Community colleges, because of their geographic location and open-door admission process, fulfill this need (Cohen & Brawer, 1996; Hughes, 1983).

Third, and especially relevant to this research, programs related to healthcare delivery are located primarily on community college campuses (U.S. Bureau of Labor, 1995). Currently, 60% of accredited radiography programs are located on community college campuses (Joint Review Committee on Education in Radiologic Technology [JRCERT], 1996). These community college radiography programs provide local access for the traditional and non-traditional students. The Virginia Community College System (VCCS) has five
radiography programs strategically located that provide access for the non-traditional student.

Community colleges and higher education institutions offering health-related occupations face several factors that make greater retention of students imperative. First, healthcare programs have maximum or limited enrollments. Program enrollments in radiography are determined by an external accreditation agency using numerous factors (Standards for Accreditation, 1997). Two determinants of particular significance are the availability of clinical placement for students and an appropriate student-to-clinical staff ratio. Radiography requires a clinical practice or internship, as do the majority of health professions. The quality of the clinical education experience is critical to student success.

Second, healthcare students are more likely to enter the field because of good-paying jobs rather than to “help people” (Dyke, 1993). Healthcare occupations have traditionally been high-paying entry-level occupations (Health Technologies, 1997). The anticipation of a good job in the health professions has traditionally led to an abundance of qualified traditional and non-traditional students competing for limited program slots.
Third, the cost to deliver and maintain a healthcare program is high in comparison with that of general education. Factors such as expensive laboratory equipment and a low faculty-to-student ratio contribute to the high cost in offering and maintaining these programs. Healthcare student-to-faculty ratios are between 8:1 and 10:1, compared to 20:1 or 30:1 in general education courses (Southwest Virginia Community, 1997). The collective consequences of these factors impose tremendous pressure on selection and retention of students.

**Statement of the Problem**

Considering six criteria for success in radiography, one may ask: Are there significant differences between community college associate-degree traditional and non-traditional student success in radiography programs? The majority of students in the VCCS seeking and gaining entrance into the five radiography programs in Virginia are non-traditional. In 1995 and 1996, respectively, there were 57% and 59% non-traditional students. Program funding was based on full-time-equivalent (FTE) students generated by the program. To remain viable, individual radiography programs must retain the
students selected for entry and limit attrition rate. The problems of this study are (a) to determine the relative success of non-traditional and traditional students in radiography and (b) to identify factors that influence successful completion of traditional and non-traditional students in radiography programs. No previous research was found that determined if non-traditional students are more successful than traditional students in radiography programs.

**Research Questions**

To determine if differences existed when examining several factors measuring success between traditional and non-traditional students of an associate degree radiography program in Virginia, the following questions were investigated:

1. Are there differences in successful completion between traditional and non-traditional students in associate degree radiography programs in Virginia?
2. Are there differences in academic success between traditional and non-traditional students in associate degree radiography programs in Virginia?
3. Are there differences in achievement on national certification by the American Registry of Radiologic Technologists between traditional and non-traditional students in associate degree radiography programs in Virginia?

4. Are there perceived differences in factors influencing success between traditional and non-traditional students in associate degree radiography programs in Virginia?

Significance of the Study

The growing trend both nationally and locally shows a decrease in the number of traditional-aged students seeking higher education. Cohen and Brawer (1996) indicated that 50% of the community college students were over 24 years of age. This trend appears to be of even greater significance on community college campuses (Boone, 1997).

The percentage of non-traditional adult students in the five VCCS radiography programs in this study have been on the increase for the past 10 years. This increase parallels the data provided by the VCCS validating the increase in non-traditional students enrolling
in Virginia's community colleges (Southwest Virginia Community
College, 1996).

Research indicates an increasing number of non-traditional
students in higher education and within healthcare programs
(Waltman, 1997). Other research has examined non-traditional
student characteristics, how they learn, campus accommodation,
methods of teaching non-traditional students, and non-traditional
student success in higher education (Dial-Driver, 1990; Kerka, 1995;
Reisenberger & Sanders, 1997; Shankar, 1994).

Can these non-traditional students successfully complete a
structured, highly competitive radiography program with limited
enrollment? Few studies exist that reveal how successful these non-
traditional students are in structured limited-enrollment programs.
A search of the literature did not reveal any study regarding success
of the non-traditional student in radiography programs. This study is
designed to determine the success and achievement of non-
traditional adult students in the five community college radiography
programs in Virginia. This study may serve as a baseline study for
other radiography and similar allied health programs regarding
success of non-traditional students in limited-enrollment programs.
Limitations

The following are limitations regarding this research:

1. The study’s findings are not generalizable to other allied health programs.

2. The study is limited to the graduates of the 1994-96 classes.

3. The study is limited to the associate-degree radiography programs in Virginia.

Definitions

Traditional learners are students attending college between the age of 17 and 22. Those students entering higher education soon after completion of secondary education (Center for Adult Programs and Services, 1995; Nuver, 1981; SVCC, 1997).

Non-Traditional learners are students attending college age 23 and over and who generally have responsibility for directing their lives (Center for Adult Programs & Services, 1995; Nuver, 1981; SVCC, 1997).
Radiography Programs are allied healthcare careers that provide instruction and learning regarding imaging procedures requested by physicians for diagnosis of disease and injury. These procedures are commonly known as X-rays, CT scans, or Magnetic Resonance Imaging (Health Technologies, 1997).

Radiographers are individuals who perform the imaging procedures requested by physicians to diagnose disease and injury (Health Technologies, 1997).

Capstone course is a culminating course that attempts to enable and evaluate students' ability to synthesize the knowledge and skill acquired in all previous program courses (Joint Review, 1993).

American Registry of Radiologic Technologists (ARRT) is the specialized accreditation organization for radiographers (American Registry of Radiologic Technologist Examinee Handbook, 1997).

Focus Groups are 6-12 selected sample members of a group who participate in an interview to determine information for qualitative research purposes (Krueger, 1994).
Overview

Chapter 1 provides a summary of the study and a brief introduction to the research. It addresses the level of importance of non-traditional student success in community college radiography programs. Chapter 2 provides a literature review of the non-traditional student in higher education. This review encompasses their characteristics, needs, and special significance to community colleges. Chapter 3 provides a description of the research methods for both the quantitative and qualitative aspects of this study. Chapter 4 presents the results of the quantitative and qualitative data analysis. Chapter 5 includes the findings, conclusions, and recommendations for future research.
CHAPTER 2
LITERATURE REVIEW

Introduction

The researcher proposed to determine the achievement of non-traditional students compared to traditional students in associate-degree radiography programs in Virginia. The focus of this research is the increased number of adult students in higher education and their level of achievement. Demographic data indicates a population trend shift from a youth-oriented to an adult-oriented student population. Merriam and Caffarella (1991) found that as early as 1987 Americans age 65 and older outnumbered those 25 and under. Indications are that the median age will continue to rise and be near 36.3 by the year 2000. This change in population age is having an impact on the type of student enrolling in higher education in America. In 1981, fewer than half of all students attending community colleges were in the traditional age category (Deegan, Tillery, & Associates, 1985). The United States Census Bureau in 1994 indicated 58% of students enrolled in college were
non-traditional students (U.S. Bureau of Census, 1996). This student population change has the potential for major effects in higher education institutions and especially for limited-enrollment healthcare programs. The need for investigation of adult student success and what circumstances facilitated that success are critical. Eaton (1988) suggested that the achievement of positive results by adults needed investigation. Eaton proposed that this research indicate vocational success and also the "value-added" results. Research on adult student success must provide information about how students learn, their motivation to learn, and what circumstances influence their success in college, specifically in a program area.

Concern rightfully exists regarding the growth of adult students and their ability to succeed in traditional, rigid, and limited-enrollment radiography programs. One noteworthy guideline used by many radiography, nursing, and other allied health programs are selective admissions criteria. These criteria are necessary to select a limited number of best qualified candidates from a large pool of applicants. External accreditation agencies influence the maximum
enrollment limits of radiography programs. The major criterion in setting enrollment limits is the number and sizes of clinical facilities available for student placement. Radiography programs participate in programmatic accreditation and must meet specific guidelines for enrollment as well as curricular and student issues to maintain accreditation (Standards for Accreditation, 1997). The requirement to limit enrollment imposes the critical need for student success. College programs feel pressure on two points regarding graduation rates. First, a competent and well-prepared student must be available for the marketplace; and second, retention of students is crucial to maintain funding stability for both the college and individual program.

Health services will constitute 10% of the total labor force by the year 2000, and the aging of the population will contribute to further growth of the healthcare industry (Labor Specialist, 1990). A competent healthcare force is required to meet this need in the next century. A conference held in Richmond, Virginia, in the spring of 1993 focused on the changing needs in healthcare and development of an agenda to meet the needs for health professionals in the future.
Specifically it was noted that there is a shortage of health care professionals in rural areas and a shortage in most practice fields (Dyke, 1993). This need brings focus on the competence of graduates and college efforts to retain those students accepted into each health discipline program. Likewise, colleges are increasingly feeling the burden of reduced funding as more money is poured into public K-12 education programs (Powers & Redding, 1995). Consequently, the retention of students and their success are of importance to the survival of health-related educational programs at community colleges. Powers and Redding indicated that nurture of the student learning environment is necessary for self survival.

The purpose of this literature review is to focus on the achievement and success of non-traditional students in radiography programs. Published literature contains a wealth of data regarding characteristics, learning styles, and teacher training for non-traditional students. The literature provides a host of suggested changes that colleges of higher education must make to accommodate non-traditional students (Dial-Driver, 1990; Frye, 1980; Hughes, 1983; Kerka, 1995; Shankar, 1994). The literature gives attention to
the differences between the traditional, as compared to the non-
traditional student, regarding each of these constructs. However,
there are few details regarding the degree of success of non-
traditional students in higher-education settings. Likewise, the
literature search revealed few studies that relate success in
healthcare programs in community colleges. This lack of research is
consequential, because data indicate that most non-traditional adult
students choose two-year colleges, whereas traditional students
choose four-year colleges (Solomon & Gordon, 1981).

This literature review begins with a brief look at the history of
the community college and its future, followed by a brief history of
radiography education and its relationship to the community college.
The next section will report on the traditional and non-traditional
student in community colleges. This data provides information
regarding the increase of non-traditional students in the community
college system. The final section will focus on the existing literature
regarding success of non-traditional learners.
History and Future of Community Colleges and Their Clientele

Debate exists regarding the establishment of the first community college. In 1851, Henry P. Tappan, who a year later became president of the University of Michigan, is credited with originating the idea for such an institution (Cohen & Brawer, 1996). Many authors give this distinction to William Rainey Harper, founder of the first “junior college”, as the lower division of the University of Chicago. Cohen and Brawer indicated that the idea of a two-year college was later supported in 1896 by William Folwell, president of the University of Minnesota.

The community college is an American concept in development and function. The rise of the community college may be attributed to several social forces in the early twentieth century (Cohen & Brawer, 1996). Those social forces were the need for trained workers for the expanding industrial base, lengthened adolescence, and a drive for social equality. These social factors are seen in attempts to nickname the community college the “Peoples College” and “Democracy’s College” as outlined by Cohen and Brawer.
The rise to popularity can also be attributed to the sizable financial increases in federal appropriations. The Smith-Hughes Act of 1917 and the Vocational Education Acts of the 1960s and 1970s helped fund the educational sector, according to Cohen and Brawer (1996). This type of increased funding brought more students to the community college campus.

Historically, nothing regarding community colleges stands out more powerfully than the value of college access for students. This factor may be the single most significant reason for the remarkable growth of community colleges in America. By 1982, community colleges enrolled half of all students attending college (Cohen & Brawer, 1996). Cohen and Brawer state that one reason for the growth in community college enrollment may have been the older students' participation. Community colleges broke with traditional admission criteria and provided easier access for the non-traditional adult student as well as for the traditional student. The principle of access became a primary focus in the 1947 President's Commission on Higher Education (Cohen & Brawer). Enhanced student access resulted in broader curriculum offerings as well as a more diverse
student population. This student diversity, enhanced by the open-door enrollment policy of community colleges, was reflected in the increase of adult students, ethnic minorities, and women attending community college (Solomon & Gordon, 1981).

Unquestionably, another factor influencing the rise of community colleges can be based on what Eaton (1988) called a framework of values:

The organizing principles of these colleges were (1) commitment to be different from traditional higher education through emphasis on access, convenience, low cost and location of service; (2) emphasis on two-year paraprofessional training; (3) reliance on quantitative growth as adequate to measure success; (4) commitment to personalized education through emphasis on teaching as the primary instructional activity; and (5) commitment to civic education as reflected in efforts to diminish the institutional barriers between these colleges and the communities they served through community-based education. (pp. 2-3)
The community college is the first choice of many students. Community colleges continue to enroll a majority of first-time freshman college students. This trend for growth will continue if community colleges focus on learner outcomes and occupational success. The future for community colleges is full of promise but filled with challenge. Societal changes, economics, and accessibility to the community college put it in an enviable position in the educational community.

History of Community College Radiography Programs

Radiography programs began as one-year programs associated with hospitals. According to Hanson (1996), programs would make a transition to two-year programs in 1941. These two-year programs would still primarily be affiliated with hospitals or university medical schools. During the period 1960-1975 a shift from hospital-based to community college programs occurred. This change paralleled the early growth of community colleges. Pressure was brought to bear on hospitals to cut costs in the early 1980s. This pressure hastened the move from hospital-sponsored to college-sponsored programs. The two-year community college was a natural
for these programs. In 1996 there were 362 college-sponsored programs and 315 hospital programs (Joint Review, 1996).

**Traditional and Non-traditional Students in Community Colleges**

Since 1978, community colleges have demonstrated growth in the enrollment of non-traditional students (Solomon & Gordon, 1981). By the end of the twentieth century a majority of students on community college campuses have been predicted to be non-traditional students (Bowden, 1992). This statistic was reinforced in a February 1991 report by the U.S. Department of Education regarding the numbers of non-traditional students (Bianchi, 1991). VCCS data for the fall 1996 semester indicated that 74% percent of students enrolled in community college curricula were non-traditional adult learners (Southwest Virginia Community College, 1996). A significant factor related to this research is the number of non-traditional students in health-related curricula. A search of Virginia community college data revealed an 83% non-traditional student enrollment in health-related curricula during fall semester of 1996. The shift from primarily traditional to increasing numbers of non-traditional students encourages colleges to consider the differences between
these groups. Differences such as motivation, educational 
preparation, and learning styles are of particular significance. 
Because 50% of those enrolled in community college are non-
traditional students, failure to consider differences in learning and 
success will result in loss of non-traditional students. The non-
traditional adult student is at risk if consideration is not given to the 
different characteristics and methods of learning by these 
individuals (Kerka, 1995). It is essential for survival that limited-
enrollment health curricula, like those found in most community 
colleges, give attention to non-traditional student learners.

Merriam and Caffarella (1991) stated that the nature of society 
at any particular point determines the emphasis placed on adult 
learning. How to deal with social changes, economic markets, and 
political changes affects the rate of involvement by adults in society. 
In 1983, Merriam observed:

The most important learning needs are not among children, but 
among adults--especially our political, intellectual, scientific, 
corporate, and religious leaders--the decision-makers who will 
be shaping the Information Society over the next two decades.
Their decisions, for better or worse, will largely determine whether the Information Society is humane, just, productive, free, and safe, or whether it is a society characterized by greater inequalities, more centralization, accelerating dangers, and further alienation. (Merriam & Caffarella, 1991).

The nature of economic and societal changes requires the non-traditional adult student to engage in education. These non-traditional students bring a different perspective to the classroom than their traditional counterparts. The higher-education experience is not always good for non-traditional students. Higher education tends to focus on serving the younger traditional students. The development of pedagogy for teaching traditional students has been the norm in higher education institutions. The educational bureaucracy created to serve these traditional learners is often at odds with the non-traditional student (Schlossberg, Lynch, & Chickering, 1989). The non-traditional students who are independent, with a name and often a title of distinction, find themselves in a situation where the "Doctor" or "Professor" is often
younger and has less life experience. This type of situation makes it very difficult for the independent, non-traditional student to adjust to the academic setting. The non-traditional adult student has a particular focus:

Adults want to feel central, not marginal; competent, not childish; independent, not dependent; colleges and universities rely on rules, regulations, and policies. As a consequence, adults and educational institutions are out of sync. (Schlossberg et al., p. 8)

Institutions that desire success in enrolling and retaining non-traditional students should give attention to assisting non-traditional adult students in adjusting to the learning environment of higher education.

Educators often assume that non-traditional students learn in a specific way and thus develop a set way for teaching. Non-traditional learners are on a fluid course with their lives (Schlossberg et al., 1989). This type of course is often referred to as a blended-life pattern (Cross, 1981). Life for non-traditional adults follows no specific order. One does not necessarily go to school, marry, work, and
have children in that order. Kerka (1995) pointed out: “The linear life course, education, work, retirement, is increasingly rare as people change jobs, retrain voluntarily, and re-enter the work force at various times” (p. 3). Kerka pointed out that non-traditional adults are heterogeneous and differ in their life patterns and process. Non-traditional adult students have pragmatic and focused reasons for attending college. Failure to understand non-traditional students will lead to dissatisfaction and high attrition rates for these students.

Knowles (1978), well known for his work in adult learning, saw the comparison between traditional and non-traditional students this way:

- Children have been conditioned to have a subject-centered orientation to most learning, whereas adults tend to have a problem-centered orientation of learning. This difference is primarily the result of the difference in time perspective. The child’s time perspective toward learning is one of postponed application. The adult, on the other hand, comes into an educational activity largely because he is experiencing some inadequacy in coping with current life
problems. He wants to apply tomorrow what he learns today, so his time perspective is one of immediacy of application. Non-traditional students see education as needed to advance or make progress in some aspect of their life, while the traditional student may see education as just a mass of knowledge required to complete the degree or course.

Non-traditional students may deal with several factors that often inhibit their success and progress in higher education. The largest study completed on non-traditional students found the following issues significant: financing of education, being less prepared as compared to their traditional counterparts, having less involvement in campus activity, and being more academically involved in pursuit of their education. These are major factors associated with non-traditional students (Solomon & Gordon, 1981). Delker (1979) found that no relationship existed between high income and previous education, relative to future participation in education by non-traditional students. Rather, his finding revealed that: "Learning by the lesser educated and those who can least
expend income for learning is as great (and possibly greater!) as for others” (p. 9).

The future holds many economic and curricular changes for community colleges. Community colleges face declining revenues that finance budgets. Financing of higher education increasingly gets more attention in state governments. In a 1986 study, 47% of the nations governors placed education at the top of their agendas (Hines, 1988). Increased political attention from governors and state governments affect both the curriculum and type of programs offered at the community college.

There is little doubt that the community college is a vital part of American education, but the future growth rate cannot match the past. The community college will need to adjust and modify its focus. The change in non-traditional student population will affect the growth and outcome of community colleges. The objective in meeting the needs of the twenty-first century workforce through retraining will be necessary as job skills change more rapidly in the future. Insuring the success of non-traditional students is of paramount importance. As increasing numbers of non-traditional students come
to the community college for retraining and second careers, emphasis will need to be placed on retention and success of these students.

**Success of Non-traditional Learners in College**

The growth of non-traditional students in higher education is substantial reason to research their degree of success. Research comparing traditional to non-traditional learners in Georgia studied the graduation rate, grade point average, and the predicted freshman average grade (PFAG) calculated by the Board of Regents, to determine adult achievement in undergraduate school (Halaska, 1992). The results of this study revealed traditional students were twice as likely to graduate as their non-traditional counterparts, non-traditional students achieved a slightly higher grade point average, and the PFAG significantly under-predicted the non-traditional learners achievement.

Cross (1981), concluded that the single most important factor in non-traditional learners involving themselves in education was past level of educational attainment.

Halaska (1992) indicated that further study was needed in the success of particular cohorts, or groups such as health professions.
The significance of success for non-traditional students compared to traditional students in such a study may uncover the differences between the groups and provide clues regarding why the differences exist.

Oyinlade (1995) in a study predicting academic success in community college concluded that non-traditional students received better grades than traditional students. The non-traditional student performance related to two factors: fewer credit hours per semester and higher motivation. The higher grade point average (GPA) was explained in this study as significantly affected by motivation. Motivation is related to how non-traditional students "fit" in the college system. How much they feel they matter to the college and/or the program. How the faculty treat the non-traditional students, regarding their acceptance by the faculty as an adult, and finding the college worthwhile or meaningful affects their motivation and performance.

Vella (1995) proposed that respect was one key element of teaching adult learners. Recognition and practice of respect are important in keeping adult students motivated. The traditional
attitudes of “open the book and follow the teacher” fails with these self-directed independent adult students.

If non-traditional students are to succeed they must have access to advice and choice, find good teaching (encouraging, enthusiastic, and empathetic tutoring), build good study habits, and set progression targets with opportunities (Reisenberger & Sanders, 1997). Adult students must be participants in their education and feel they matter.
Chapter 3 outlines the background for this study, the procedures for data collection, the population along with criteria for selection of the participants, and methods for data analysis. This chapter also includes a discussion of the suitability of the qualitative portion of this research study and the rationale for the activities associated with the study.

Description of Study

This research study determined the success of non-traditional compared with traditional students in completion of a radiography program. Success was determined by employing a study comparing traditional and non-traditional students. This comparison answered several research questions through collection and analysis of quantitative data. These goals required use of research methods to collect quantitative and qualitative data to explore and confirm the success of learners in this study. Causal-comparative research methods were employed in the quantitative segment of this study.
The qualitative portion of the study was based upon the use of focus groups to identify factors related to student success.

The dual approach to this research allowed both discovery and confirmation (Gall, Borg, & Gall, 1996). Quantitative testing determines what significance exists between the two groups, and the qualitative segment allows examination of other factors outside the quantitative scores. Both approaches are compatible and allow researchers to make discoveries (Gall et al.).

**Population/Sample**

The target sample for the study were students from five community colleges in Virginia that offer the Associate in Applied Science Degree in Radiography. Central Virginia Community College in Lynchburg, Virginia, had 1,978 FTE students enrolled in the 1995-96 academic year and Central Virginia Community College enrolled 20 radiography students each year. Northern Virginia Community College, with campuses in Alexandria, Annandale, Loudoun, Manassas, and Woodbridge, had 21,142 FTE students in 1995-96 and enrolled 45 radiography students each year. Southwest Virginia Community College and Virginia Highlands Community College
enrolled 2,611 and 1,270 FTE students respectively, during the 1995-96 year. Southwest Virginia and Virginia Highlands cooperate to provide a single radiography program that is housed on the Southwest Virginia Community College campus and enrolls 24 students each year. Tidewater Community College had 10,486 FTE students during the 1995-96 academic year and enrolls 45 radiography students each year. Virginia Western Community College, located in Roanoke, Virginia, had 3,302 full-time-equivalent students in the 1995-96 academic school year enrolls 24 radiography students each year (Southwest Virginia Community College, 1997).

The sample for the quantitative data consisted of graduates from the five community-college radiography programs in Virginia. These five programs are the only community college associate-degree programs in the VCCS. The sample in this study includes all the radiography graduates from the classes of 1995, 1996, and 1997.

A convenience sample of 6 to 14 students made up each focus group for the qualitative part of the study. Student participants for the qualitative analysis were from the 1997 class.
A request to the program directors for permission to review and collect data from the radiography records preserved the ethics in this study. (See Appendix I.) Every measure was taken by the researcher to conduct the study with honesty and integrity. Participants were not identified in this study. Identification of focus group members was by number and traditional (t) or non-traditional (nt) status. The goal for data collection in this study was factual representation of the research. Permission from the East Tennessee State University Institutional Review Board to conduct this study is a part of the research document.

Data Collection

Data for the quantitative portion of the study came from the program director’s records office at each community college. Southwest Virginia Community College houses the records for the cooperative program. These records provided student age, gender, marital status, academic records, ARRT examination scores, grade point averages, clinical records, and competency evaluations. Each of the five radiography programs has similar data files. A Statistical
Package for the Social Sciences (SPSS) file created from these records contains the relevant data for the research questions in this study.

The qualitative research for this study is a convenience sample of five focus groups selected from the 1997 radiography class at each of the five community colleges in this study. The program director at each institution informed students regarding the nature and purpose of the focus-group interview, and students then volunteered for the project.

**Focus Group Pilot Study**

The pilot test for the focus-group part of this study occurred by selection of a sample population from the current radiography class at Southwest Virginia Community College. Selection was by convenience sampling. Four non-traditional students and two traditional students participated in the pilot focus-group interview. The focus-group question guide was critiqued and evaluated by the five program directors before pilot testing the instrument. (See Appendix II.) Krueger (1994) stated that pilot testing of focus-group interviews must consider the nature of the questions, audience characteristics, interactions between participants, and moderator.
procedures. Pilot testing provides the researcher an opportunity to fine-tune the process. A second pilot test is conducted if major modifications or changes are needed (Krueger). No changes were recommended by the program directors for the focus-group question guide. Minor changes in recording the interview were made by the researcher after the pilot group interview. A second audio recorder was secured as a back-up should failure occur during taping.

Research Questions

To determine if differences existed between traditional and non-traditional students in successful completion of an associate-degree radiography program in Virginia, the following research questions were investigated:

1. Are there differences in successful completion rates between traditional and non-traditional students in associate-degree radiography programs in Virginia?

2. Are there differences in academic success between traditional and non-traditional students in associate-degree radiography programs in Virginia?
3. Are there differences in achievement of national certification by the American Registry of Radiologic Technologists between traditional and non-traditional students in associate-degree radiography programs in Virginia?

4. Are there perceived differences in factors contributing to successful completion of a radiography program between traditional and non-traditional students?

**Research Hypothesis**

The following are the null research hypotheses that were tested for significant difference:

\( H_01 \): There is no difference in the graduation rate between non-traditional students and traditional students.

\( H_02 \): There is no difference in the entering grade point averages (GPA) between non-traditional students and traditional students.

\( H_03 \): There is no difference in the exiting (GPA) between non-traditional and traditional students.

\( H_04 \): There is no difference on scores in a capstone course between non-traditional students and traditional students.
$H_0$5: There is no difference in scores on the (ARRT) national examination between non-traditional students and traditional students.

$H_0$6: There is no difference in pass/fail rates on the (ARRT) national examination between non-traditional and traditional students.

**Data Analysis**

This research allowed the examination of the effects of personal characteristics (non-traditional age) on success by comparing individuals with that characteristic to those in whom it is absent (Gall et al., 1996). The graduation rates of the two groups were nonparametric statistics and required the Chi-square test for comparison of groups. The comparisons between the traditional and non-traditional students regarding their GPA, capstone-course scores, ARRT examination scores, and drop-out rates were parametric data that required the t-test for statistical testing. A two-tailed test of significance determines the statistical significance of these research questions. An alpha level of .05 was used throughout this study.
The qualitative research for perceived differences in success was conducted with the use of focus group interviews. All five colleges in this study were sites for a focus group interview. This approach to research assisted in uncovering complex behavior and motivation. Focus groups are useful in providing data in complicated topics where opinions and attitudes are conditional or where areas of concern relate to multifaceted behavior or motivation (Krueger, 1994). The purpose of the qualitative data was to determine factors that affect traditional and non-traditional student learner success. The focus group provided insight into these factors through a nonthreatening method of data collection. Krueger stated the following regarding the purpose of focus groups:

The purpose is to uncover factors relating to complex behavior or motivation. Focus groups can provide insight into complicated topics where opinions or attitudes are conditional or where the area of concern relates to multifaceted behavior or motivation. (p. 45)

Krueger pointed out that the focus group allows the researcher to go beyond the usual quantitative measures of generalization and
inference to perceptions, understandings, and insights regarding the researcher's topic. The focus group is well suited for exploring attitudes and cognition (Morgan, 1988). The focus group interaction is an advantage, for it reduces the direct effects of the interviewer and leads to greater emphasis on participants' point of view (Morgan).

Stewart and Shamdasani (1990) stated that focus groups yield both exploratory and confirmatory research data. This type of qualitative research will assist in identification of factors influencing achievement of students in associate degree radiography programs.

Development of Focus Group Interview Questions

The questions for the focus group question guide were developed by the researcher using Kruger's (1994) suggested questioning procedures. The interview questions for the guide followed the pattern of sequencing questions in the following order: Opening Question to get students into the process of the focus group interview, Introductory Questions that introduce the general topic of discussion, Transition Questions that move the questions into the key questions of the focus group interview, Key Questions that provide
the questions for analysis, and Ending Questions that offer a final opportunity for reflection on the interview or anything the group wishes to add to the interview. The question guide for this research is found in Appendix I.

Focus group questions

The questions for the focus group interview guide were developed and shared with the chair of the dissertation committee. After suggestions and comments from the chair, the questions were sent to the five radiography program directors for their critique. The objectives and purpose of the study were included with the interview guide questions.

Two telephone conversations were also conducted with each director to clarify and encourage input for the questions and other aspects of the project. After careful review, each director responded with his or her review of the questions. All five directors felt the questions were appropriate and no suggestions were made for the focus group question guide.
Pilot Test

A pilot test was conducted in the summer semester of 1997 prior to conducting the focus-group interviews. The pilot test was conducted with six second-year students in the Southwest Virginia Cooperative Program with Virginia Highlands Community College. Four non-traditional and two traditional students comprised the pilot test group. The pilot test was performed to test the instrument for validity and allow the researcher the opportunity to test facilitation skills for the project. Two faculty members in radiography then compared the notes of the interview with the questions, to confirm that the focus-group questions were appropriate for the study. Confirmation was given for the questions. The pilot test confirmed the use of the interview question guide.

Population

The target population for the study included second-year students from the five associate-in-applied-science degree radiography programs in Virginia. Each college is described as a comprehensive community college. Four are urban colleges, and one is a rural college.
Sample

The sample for the qualitative part of this study was taken from the second-year class of radiography students at the five colleges comprising this study. There were five groups making up the sample, which included a total of 49 students. The breakdown of the group was 24 traditional and 25 non-traditional students.

Data Collection

Focus-group interview sessions were scheduled with the directors of each college offering radiography in the Virginia Community College System. Interview dates were selected in the late summer semester of 1997 and confirmed by letter and telephone with each college. The participants for the focus group were selected by convenience sample. Directors of each program were provided the details regarding the interviews, and students in their second year of the radiography program at each college were asked to participate. Six to twelve students were considered to be appropriate for this type of study (Krueger, 1994). Students were provided an overview for the project prior to beginning the interview.
The focus-group interviews were tape recorded to facilitate data collection and analysis. The researcher also kept written notes for each question in all groups. Prior to the focus-group interviews, participants were allowed the opportunity to leave if they did not wish to be tape recorded, or passed over if not desirous of answering a particular question. The focus group interviews ranged from one to two hours.

Summary

Data were gathered from five community colleges in Virginia to answer four research questions. Five null hypotheses were analyzed using Chi-squares and t-tests to determine the significance of the quantitative data. A two-tailed test was used to determine the statistical significance of the research questions. Focus group interviews were used to assess the success of radiography students and provide qualitative data for analysis in several areas. These areas included selection of a radiography program, process for entry, perceptions about the career choice, factors regarding motivation to complete the program, obstacles to completion of the program, work and family responsibilities that influenced the student while
enrolled, faculty influence on program completion, and instructional methods. Five sample sets were drawn from the target population to make up the focus groups. The use of the five groups allowed for triangulation. Triangulation of this nature allows the researcher to validate findings in the study (Gall et al., 1996). The use of the quantitative and qualitative data allowed for analysis of the research questions in this study.
CHAPTER 4
DATA ANALYSIS

This study examined the success of traditional compared to non-traditional students who were enrolled in radiography programs in the VCCS. The community colleges in this study are: Central Virginia Community College, Northern Virginia Community College, Southwest Virginia and Virginia Highlands Community College Cooperative Program, Tidewater Community College, and Virginia Western Community College. Quantitative data on students were gathered from program directors at each institution and transferred to a SPSS file. Focus-group interviews were conducted at each of the five colleges in this study. These interviews provided qualitative data for investigation regarding student opinion of factors contributing to their success. This study presents a quantitative analysis of five factors illustrating success of radiography students and qualitative analysis of what students in the five programs identified as factors contributing to their success.

Chapter 4 presents results of the data analysis. The chapter
regarding geographic location of the participants in the research project, analysis of the quantitative data, and finally the qualitative analysis obtained from student focus groups. These focus groups provided student opinions on success factors in radiography programs.

Description of Student Participants

The quantitative data pertained to radiography graduates for five community colleges in Virginia from 1994-1996. Table 1 provides a description of these participants. There were 113 data entries representing traditional students who formed 31% of the population and 249 non-traditional students comprising 69% of the participants in this study. There were 98 traditional females, 190 non-traditional females 15 traditional males, and 59 non-traditional males. These data make up the Virginia Community College enrollment in radiography for the years 1994-1996.
### TABLE 1

TRADITIONAL AND NON-TRADITIONAL PARTICIPANTS BY GENDER

<table>
<thead>
<tr>
<th></th>
<th>Traditional (N= 113)</th>
<th></th>
<th>Non-Traditional (N= 249)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>%</td>
<td>N</td>
<td>%</td>
</tr>
<tr>
<td>Male</td>
<td>15</td>
<td>13%</td>
<td>59</td>
<td>24%</td>
</tr>
<tr>
<td>Female</td>
<td>98</td>
<td>87%</td>
<td>190</td>
<td>76%</td>
</tr>
<tr>
<td>Total</td>
<td>113</td>
<td>100%</td>
<td>249</td>
<td>100%</td>
</tr>
</tbody>
</table>

Of this population, 80% of the students were enrolled in urban community colleges constituted by Central Virginia, Northern, Tidewater, and Virginia Western Community Colleges. The Southwest Virginia-Virginia Highlands Cooperative Program was the only rural program in the study. The definition for rural is taken from the U.S. Census Bureau for 1990 (U.S. Census, 1995). Table 2 provides a descriptive view of the breakout of traditional and non-traditional...
students are urban, while 15% are rural. Seventy percent are
traditional urban students and 30% are rural community college
students.

TABLE 2

TRADITIONAL AND NON-TRADITIONAL
STUDENTS BY RESIDENCE

<table>
<thead>
<tr>
<th>Residence</th>
<th>Traditional (N= 113)</th>
<th>Non-Traditional (N= 249)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>%</td>
</tr>
<tr>
<td>Urban</td>
<td>79</td>
<td>70</td>
</tr>
<tr>
<td>Rural</td>
<td>34</td>
<td>30</td>
</tr>
<tr>
<td>Total</td>
<td>113</td>
<td>100</td>
</tr>
</tbody>
</table>

Hypothesis Testing Method

Chi-square statistical procedures were conducted for
comparison of nonparametric statistics that included graduation rates
between traditional and non-traditional students and the pass rates
on the ARRT examination. The Chi-square test is appropriate for
nonparametric data (Gall et al., 1996). Statistical testing using the t-
test was performed for the comparison of GPA, capstone course, and ARRT examination scores. The use of the t-test provides appropriate statistical analysis for this type of parametric data (Gall et al.).

Each null hypothesis is presented and followed by the computed test statistic. The statistic result is then presented rendering a decision to accept or not accept the null hypothesis (Hinkle, Wiersma, & Jurs, 1994). A SPSS statistical software package was used to compute each test statistic. An alpha level of .05 was used for the quantitative component of this study.

**Null Hypothesis 1**

\[ H_0:1 \] There is no difference in the graduation rate of non-traditional students compared to those of traditional students.

The Chi-square test was used to compare the non-traditional to the traditional student for graduation rates. The Chi-square test had a value of .362 at a significance level of .547 with one degree of freedom. The significance level of .547 was greater than the alpha level of .05; therefore, the null hypothesis was not rejected. This result indicates no significant difference in the graduation rate of non-traditional students compared to traditional students. However,
the data show that there is a tendency for a higher percentage of traditional students (89.4%) to graduate than non-traditional students (87.1%). Table 3 illustrates the Chi-square test for graduation rates of non-traditional students compared to traditional students.

**TABLE 3**

CHI-SQUARE ANALYSIS: GRADUATION RATE OF NON-TRADITIONAL STUDENT COMPARED TO TRADITIONAL STUDENT

<table>
<thead>
<tr>
<th>Categories</th>
<th>Graduate</th>
<th></th>
<th>Non-Graduate</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>%</td>
<td>N</td>
<td>%</td>
</tr>
<tr>
<td>Traditional</td>
<td>101</td>
<td>89.4</td>
<td>12</td>
<td>10.6</td>
</tr>
<tr>
<td>Non-Traditional</td>
<td>217</td>
<td>87.1</td>
<td>32</td>
<td>12.9</td>
</tr>
<tr>
<td>Total</td>
<td>318</td>
<td>100</td>
<td>44</td>
<td>100</td>
</tr>
</tbody>
</table>

$X^2(1, N= 362) = .362, p = .547 (> .05)$

**Null Hypothesis 2**

$H_02$: There is no difference in GPA at program entry of non-traditional compared to those of traditional students.
The t-test for independent samples was used to compare the non-traditional to the traditional student on entering GPA. The scores were ranked using equal intervals. The mean GPA for traditional students was 3.0, and the mean GPA for non-traditional students was 3.3. The t-value of 3.74 was significant at an alpha level less than .0001. This is interpreted to mean that non-traditional students have a higher GPA at program entry than do traditional students. An alpha level of .05 was used to determine the statistical significance of the research hypothesis. Table 4 presents the t-test for comparing the entering GPA of the two groups.

The t-test analysis did show a statistically significant difference between the means at a .05 probability level. The null hypothesis was rejected. Table 4 illustrates the mean entering GPA of non-traditional students compared to traditional students.
TABLE 4

**t-TEST FOR DIFFERENCE IN ENTERING GRADE POINT AVERAGE OF NON-TRADITIONAL COMPARED TO TRADITIONAL STUDENT**

<table>
<thead>
<tr>
<th>Category</th>
<th>Mean</th>
<th>SD</th>
<th>t</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Traditional (n = 111)</td>
<td>3.09</td>
<td>.55</td>
<td>3.74</td>
<td>.000</td>
</tr>
<tr>
<td>Non-traditional (n = 236)</td>
<td>3.31</td>
<td>.49</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Null Hypothesis 3**

$H_0$: There is no difference in the exiting GPA for non-traditional students compared to those of traditional students.

The $t$-test for independent samples was used to compare the non-traditional student to those of the traditional student on exiting GPA. The scores were ranked using equal intervals. The mean GPA for traditional students was 3.27, and the mean GPA for non-traditional students was 3.50. The $t$-value of 5.11 was significant at the .0001 alpha level. This is interpreted to mean that non-traditional students have a higher exit GPA than traditional students.
comparing the exiting GPA between non-traditional and traditional students.

The t-test did show a statistically significant result at the probability level of .05 between the GPA of non-traditional student compared to traditional students. The null hypothesis was rejected.

TABLE 5

\textbf{t-TEST FOR EXITING GRADE POINT AVERAGES OF NON-TRADITIONAL COMPARED TO TRADITIONAL STUDENTS}

<table>
<thead>
<tr>
<th>Category</th>
<th>Mean</th>
<th>SD</th>
<th>t</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Traditional (n = 110)</td>
<td>3.27</td>
<td>.48</td>
<td>5.11</td>
<td>.000</td>
</tr>
<tr>
<td>Non-traditional (n = 239)</td>
<td>3.50</td>
<td>.36</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Missing cases = 13</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

\textbf{Null Hypothesis 4}

\( H_0.4 \): There is no difference in scores in a capstone course for non-traditional students compared to those of traditional students.
The t-test for independent samples was used to compare the difference in capstone course scores of non-traditional and traditional students. The scores were ranked using equal intervals. The mean capstone score for traditional students was 2.39, and the mean for non-traditional students was 2.79. The t-value of 4.41 was significant at an alpha level less than .0001. This is interpreted to mean that non-traditional students score higher on capstone courses than traditional students. An alpha level of .05 was used to determine the statistical significance of the research question. Table 6 presents the data for comparing the scores in capstone courses for non-traditional students compared to traditional students. The statistical research did show a significant difference between the non-traditional compared to the traditional student on capstone course scores. The null hypothesis was rejected.
TABLE 6

$t$-TEST FOR DIFFERENCE IN CAPSTONE COURSE FOR NON-TRADITIONAL COMPARED TO TRADITIONAL STUDENTS

<table>
<thead>
<tr>
<th>Category</th>
<th>Mean</th>
<th>SD</th>
<th>t</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Traditional (n = 101)</td>
<td>2.39</td>
<td>.66</td>
<td>4.41</td>
<td>.000</td>
</tr>
<tr>
<td>Non-traditional (n = 211)</td>
<td>2.79</td>
<td>.79</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Missing cases = 5</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Null Hypothesis 5

$H_0 5$: There is no difference in scores on the ARRT national examination for non-traditional students compared with those of traditional students.

The $t$-test for independent samples was used to compare the differences in scores on the ARRT national examination for non-traditional students compared to those of traditional students. The scores were ranked using equal intervals. The mean ARRT score for traditional students was 85.7 and the mean score was 86.1 for non-traditional students. The $t$-value of .40 was not significant at a .05
alpha level. This was interpreted to mean that there is no difference between the scores of traditional and non-traditional students on the ARRT examination. An alpha level of .05 was used to determine the statistical significance of the research question. The t-test provided no statistical significance between the national examination scores for non-traditional students compared to traditional students. The null hypothesis was not rejected. Table 7 presents the data for this research question.

TABLE 7

t-TEST FOR (ARRT) EXAMINATION NON-TRADITIONAL COMPARED TO TRADITIONAL STUDENTS

<table>
<thead>
<tr>
<th>Category</th>
<th>Mean</th>
<th>SD</th>
<th>t</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Traditional (n = 65)</td>
<td>86</td>
<td>5.0</td>
<td>.40</td>
<td>.690</td>
</tr>
<tr>
<td>Non-traditional (n = 96)</td>
<td>86</td>
<td>6.5</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Missing cases = 201

ARRT examination scores are confidential, and not all scores are available for this hypothesis. There were 201 missing scores due to the lack of reporting by students to the programs. Nevertheless,
there were significantly large numbers of cases with non-missing values to warrant testing this hypothesis. Scores are not released to programs without student agreement. Otherwise, only pass or fail scores are released. The following test statistic was performed on the pass or fail data that was available to the researcher.

**Null Hypothesis 6**

$H_0:6$: There is no difference in pass or fail rate for non-traditional students compared to traditional students.

The Chi-square test was used to develop research statistics regarding the pass or fail rate for non-traditional students compared to traditional students. The Chi-square test revealed a value of .079 at a significance level of .777 with one degree of freedom. The significance level was .777 and the alpha level was .05. This is interpreted to mean there are no statistical difference in pass or fail rates between traditional and non-traditional students on the ARRT examination. The test result shows no significance difference in pass or fail rate for non-traditional students compared to traditional students. The null hypothesis was not rejected. Table 8 provides the data for this research.
TABLE 8

CHI-SQUARE ANALYSIS: PASS OR FAIL RATE

NON-TRADITIONAL COMPARED TO TRADITIONAL STUDENTS

<table>
<thead>
<tr>
<th></th>
<th>Traditional $n=101$</th>
<th>Non-Traditional $n=212$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scoring</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pass</td>
<td>96  95</td>
<td>203  95.75</td>
</tr>
<tr>
<td>Fail</td>
<td>5     5</td>
<td>9   4.25</td>
</tr>
<tr>
<td>Total</td>
<td>101  100.0</td>
<td>212  100.0</td>
</tr>
</tbody>
</table>

$X^2(1, N=313) = .079, p = .778 (> .05)$

Description of Qualitative Analysis

The qualitative portion of the study was accomplished with focus-group interviews at the five community colleges comprising this study. The focus groups were convenience samples, with each group having eight or more members. The focus-group interviews were conducted in an appropriate setting at each campus (Krueger, 1994). Each group was arranged in a semicircle to aid participants in eye contact during the interview (Krueger). Participants were provided...
the background for the study before beginning the focus-group interview. Students were given the opportunity to leave the group if they did not wish to participate or felt uncomfortable with the background for the focus-group interview. No participant left any of the focus-group settings.

Each group was organized to identify the traditional from the non-traditional student on the taped interviews. All participants were encouraged to give answers to each question; however, if a participant did not wish to respond, the question went to the next individual in succession. A back-up recorder was available in case of technical difficulty with recording of the interviews. Interview notes were taken by the researcher to corroborate the taped interview.

The focus-group interviews were preceded by a pilot study to test the relevance of the questions. The pilot study also allowed the researcher an opportunity to hone skills for the interview process. As recommended by Krueger (1994), a post-interview was conducted with the pilot focus-group members to evoke their opinion of the focus-group questions and to determine how well they related to the research project. The group confirmed that the questions were appropriate and related to the research project.
Program directors from the five colleges in the research project were asked to evaluate the interview questions and provide comments or suggestions for revisions (See Appendix I.). Program faculty at Southwest Virginia Community College were asked to evaluate the interview questions for application to this study. No suggestions were made regarding the questions or their appropriateness for the focus-group project (See questions in Appendix II.). The interviewer did make minor adjustments to the taping process before beginning the interviews at each community college. A back-up audio tape recorder was employed for security purposes and to prevent termination of the interview if the initial recorder failed.

No effort was made to reach a group consensus; rather, attention was given to understanding the thought process used by the participants. Krueger (1994) asserted that the focus group is appropriate for identifying perceptions, feelings, and manner of thinking. The use of focus groups following quantitative data collection can provide meaning and interpretation of results. These interviews can also suggest strategies and actions for problems that arise as a result of the research data (Krueger). The primary goal in
these interviews was to collect data regarding student perceptions of success factors. Every effort was made to collect this data in an honest way while maintaining confidentiality for participants and integrity for the study.

Focus Group Findings

In this section of the study, findings are presented for the focus group interviews of the five groups. Presentation is also made of the student sample group. This section is divided into 12 themes identifying factors contributing to success in the radiography program. From these categories factors for success are determined.

Composition of the Focus Group Participants

The members of the student focus groups were 49 students in their final year at Central Virginia Community College, Northern Virginia Community College, Tidewater Community College, Southwest Virginia and Virginia Highlands Community Colleges’ Cooperative Program, and Virginia Western Community College. Table 9 provides the description of the focus group participants for this study.
Twenty-eight percent of the group were non-traditional male students and 25% were traditional male students. Seventy-two percent of the group were non-traditional female students and 75% traditional female students.

Analysis of the findings was made by identification of themes found in the answers for each narrative question that identified success. Themes were confirmed by the services of a researcher for Sheraton Global Connections in Raleigh, North Carolina, to corroborate the researcher’s findings. Confirmation was positive and provided triangulation for the research (Gall et al., 1996). Further validation
was provided by two radiography faculty members who read the focus group interview raw data, followed by the analysis and reporting of this researcher.

Findings of the Focus Group Interviews

The focus-group interview data was collapsed into 12 primary topics or themes of discussion related to success. For this study, success was defined as program completion. The participants' perceptions of what impacted their lives in completion of the program are the focus of these primary topics. These 12 topics were: (a) perceptions of a good program, (b) personal goals, (c) perceptions on program entry, (d) motivation to enter and complete the program, (e) faculty influence, (f) financial factors, (g) work impact, (h) community college impacts, (i) impacts of instructional methods and styles, (j) impacts of study methods, and (k) other perceived influences.

The focus-group interviews revealed only minor differences between traditional and non-traditional students' perceptions of success. Non-traditional students were more inclined to continue their education and establish lasting relationships with classmates.
and instructors. Their relationship to the group was important to most non-traditional students. Traditional students were more focused on program completion and measuring success by their grades.
CHAPTER 5

SUMMARY, CONCLUSIONS, RECOMMENDATIONS

FOR FUTURE RESEARCH STUDY

Background and Setting

Radiography is a rapidly growing healthcare profession and a key part of many community colleges and universities. Radiography programs have limited enrollments that are determined by standards set by a national accreditation agency. These standards are applied to clinical facilities that provide the internships or clinical experience for student radiographers (Joint Review, 1997). The clinical facility's measurement to these standards will in large part dictate the enrollment quota for any program.

The presence of limited enrollment is a motivation for colleges to retain those students that are accepted into the program. Minimum admission criteria exist for all programs in radiography. Each program may go beyond those minimum criteria if desired. These criteria are attempts to insure that those entering a limited-enrollment program are well qualified and are good candidates for
be fair and equitable but also insure that those admitted understand the profession they are entering and desire to sustain the course for the two years required for program completion.

Recent years have seen an increase in the number of non-traditional students gaining admission into these programs. In Virginia's community colleges the number has risen steadily. This increase in non-traditional students has occurred when overall enrollment in the VCCS for 1993-97 has been in decline (Southwest Virginia Community College, 1997). During the period of 1994-1996, 249 non-traditional and 113 traditional students enrolled in VCCS radiography programs. The non-traditional enrollment for this period constituted 68.8% of the total enrollment for radiography programs in Virginia.

Review of the research indicates that the trend for non-traditional college enrollment will continue (Kerka, 1995; Matthews, 1995; Schlossberg et al., 1989). The literature research on non-traditional students provides insight into how to recruit and retain students and how to change classroom tactics to relate to this growing group of students. Flexibility in scheduling and course
offerings are frequently cited as critical to retention of these students (Schlossberg et al., 1989).

However, no research indicates how non-traditional students fare in a structured health program like radiography. These programs traditionally require students to attend class at traditional time frames and incorporate a clinical practice around the academic schedule. It is not unusual for students to spend 40 hours each week in class and clinical assignments. Weekend and evening rotations are not uncommon for these programs. This leaves limited time for study, family, or personal affairs. Efforts to extend the program over more than two years by part-time attendance is rarely done.

The underlying question in this study was how successful is the non-traditional student compared to the traditional student. Non-traditional students are at a different point in their life and have responsibilities that rarely exist for traditional students (Schlossberg et al., 1989). Non-traditional students often have a spouse or children, hold a job for survival, and have a host of other significant factors that contribute to the complexity of their lives (Shankar,
1994). The traditional student, as a rule, does not meet with the same responsibilities and other factors in their lives.

Summary of Major Findings

This research study included 362 students who were enrolled in five Virginia community college radiography programs. Data concerning the students were collected on five variables for quantitative analysis. Focus-group interviews were conducted that analyzed 12 perceptions that indicate success for program completion in radiography.

Graduation Rate

All 362 students had data for this variable. There were no missing cases for graduation rate in the statistical analysis. There were 10.6% (n = 12) of the traditional students who were non-completers and 89.4% (n = 101) completers from the five radiography programs in this study. There were 12.9% (n = 32) non-traditional non-completers and 87.1% (n = 217) completers. A chi-square analysis was conducted and there was no significant
difference between the traditional and non-traditional students on completion of studies.

**Grade Point Average**

The variable for grade point average was statistically analyzed for both entering and exiting GPA. Traditional students ($n = 111$) had a mean GPA of 3.1 at entry and non-traditional students ($n = 236$) had a mean GPA of 3.3. There were 15 missing cases in this statistic. The t-test demonstrated a statistical difference between traditional and non-traditional GPA. Non-traditional students have a higher mean GPA at entrance than traditional students.

The mean GPA at exit for traditional students ($n = 110$) was 3.3 and the non-traditional ($n = 239$) was 3.5. There were 13 missing cases in this statistic. The t-test demonstrated a statistical difference between traditional and non-traditional students. Non-traditional students have a higher mean GPA at exit than traditional students.

**Capstone Course**

The capstone course at each college is used to access the learning and culmination of knowledge required for the ARRT
examination. This course is offered the last semester of a student's enrollment in radiography. The mean GPA for traditional students \((n = 101)\) was 2.4 and the mean GPA for non-traditional students \((n = 211)\) was 2.8. There were 50 missing cases for this statistic. The t-test demonstrated a statistical difference between traditional and non-traditional students. Non-traditional students have a higher mean capstone score than traditional students.

**ARRT Exam**

The ARRT examination is taken at the end of the radiography program. Examination scores were not available for all participants in this study. However a larger number of pass-fail scores were available for statistical testing. The mean score for traditional students \((n = 65)\) was 86 and the mean score for non-traditional students \((n = 96)\) was 86. There were 201 missing cases for this statistic. The t-test showed no statistical difference in ARRT test scores.

A second test using the chi-square for statistical analysis on the variable for pass or fail data on the ARRT examination was performed. The data showed that 95\% \((n = 96)\) of the traditional
students passed the ARRT examination and 5% (n = 5) failed. The non-traditional data showed 95.8% (n = 203) passed the examination and 4.2% (n = 9) failed. There were 49 missing cases for this statistic. A chi-square analysis showed no statistical significance between the traditional and non-traditional student on pass/fail rate.

**Student Perception Factors for Success**

The focus-group interviews centered on 12 themes contributing to success in radiography programs. The consensus for each of these factors is as follows:

1. Perceptions of a good program were not observably different between the traditional and non-traditional students. Both indicated that a good program was related to the clinical instructors and instruction related to the practical application of classroom lectures.

2. Personal goals were similar for both groups for finding employment or a job. Both indicated interest in continuing their education, but non-traditional students were more likely to mention further education. They viewed education as helping them be successful. Kaplan and Saltiel (1997) supported this factor. They indicated that non-traditional adult students relate education to
responsibility and identity issues and continue their education when they see it is worthwhile. Knowles (1978) indicated that adults see education as a way to advance whereas traditional students view it only as a mass of knowledge.

3. Perceptions on program entry were similar for both traditional and non-traditional students. They viewed the program as more difficult than anticipated but were happy to have been selected and eventually felt better about their progress.

4. Motivation to complete the program was characterized by traditional and non-traditional students in similar ways. Family influence, a high degree of self-motivation, and the diverse specialties beyond the two-year program made up the list. Non-traditional students did offer more negative comments regarding support of spouses during the program that motivated them toward program completion. Non-traditional students tended to focus on securing a fulfilling job as a motivational factor for program completion.

5. Faculty influence was a positive factor for both traditional and non-traditional students. Comments were similar from both groups of
students regarding this question. Non-traditional students tended to
describe more lasting relationships with faculty than did traditional
students. Schlossberg et al. (1989) referred to the idea of mattering
in adults. Adult students need to know others care about them and
appreciate them.

6. Financial factors were a concern for both traditional and non-
traditional students. However, the traditional student relied on
parents, whereas the non-traditional student was more concerned
about living expenses related to supporting a family.

7. Work impact took a toll on both traditional and non-traditional
students. Traditional students worked to have money to aid in their
expenses. The non-traditional student was earning money for
sustaining a home. Needs such as family insurance and helping the
spouse were often mentioned.

8. Family impact was similar for both traditional and non-traditional
students. Both groups indicated that they received major support
from family members. Non-traditional students tended to reflect
guilt for time taken from their children. Non-traditional students
were more likely to indicate negative feelings about their
relationship and support from their spouse during their educational endeavor. These comments were captured on and off the taped record.

9. Community college impacts were minimal. All students had difficulty with this question. The counselor was cited as having most of the influence on their success.

10. Instructional impacts had the most consistent answers from traditional and non-traditional students. Both groups indicated that hands-on, visual aids, and repetition in clinical practice was key to their success.

11. Method of study varied with the focus groups. Most non-traditional students liked to study alone, review tape recordings, and review by outlining chapters. To a lesser extent traditional students preferred studying alone, but more often preferred group study.

12. Other influences were related to the faculty in the various programs. Both traditional and non-traditional students indicated that faculty were instrumental in their success. They credited the faculty with support, encouragement, acceptance of each of them as
an individual, and caring. Rarely was there any mention of faculty in a negative context.

To briefly summarize for the reader, it can be said that only minor differences between traditional and non-traditional students’ perceptions of success were identified in the focus-group interviews. Non-traditional students did appear to be more inclined to continue their education and sought to establish lasting relationships with classmates and instructors. The relationship with their individual group was important to most non-traditional students.

Conclusions

The following conclusions are based on the data interpretations from this research study. Conclusions are presented in the order of the research questions.

Research Question Number One

Are there differences in successful completion between traditional and non-traditional students in associate degree radiography program in Virginia?
H$_0$1: There is no difference in the graduation rate between non-traditional students and traditional students. Hypothesis number one was used to answer this question. A chi-square test showed no statistical difference between the two groups. In this study 89.4% of the traditional students (n = 101) completed the program and 87.1% of the non-traditional students (n = 217) were program completers. The hypothesis was not rejected.

**Research Question Number Two**

Are there differences in academic success between traditional and non-traditional students in associate-degree radiography programs in Virginia?

H$_0$2: There is no difference in the entering GPA between non-traditional and traditional students.

H$_0$3: There is no difference in the exiting GPA between non-traditional and traditional students.

H$_0$4: There is no difference on scores in a capstone course between non-traditional and traditional students.

Hypotheses number two, three, and four were used to answer this question. A t-test for independent samples was significant in
comparison of entering and exiting GPA as well as a capstone course to assess culmination of knowledge. The null hypotheses were rejected. Non-traditional students indicated significantly more academic success than did traditional students.

Research Question Number Three

Are there differences in achievement on the national certification exam by the ARRT between traditional and non-traditional students in associate-degree programs in Virginia?

$H_0.5$: There is no difference in scores on the ARRT national examination between non-traditional and traditional students.

$H_0.6$: There is no difference in pass/fail rates on the ARRT national examination between non-traditional and traditional students.

Hypotheses number five and six were used to examine this research question. A $t$-test for independent samples was not significant in comparison of examination scores. A chi-square analysis to compare pass/fail scores between traditional and non-traditional students was not significant.
Research Question Number Four

Are there perceived differences in factors contributing to successful radiography program completion between traditional and non-traditional students?

Evaluation of 12 criteria from focus-group interviews at the five community colleges in this study did not show any significantly perceived differences between traditional and non-traditional students regarding the focus-group questions. There was a surprising similarity between the two groups. Contrary to the literature they were more homogenous than heterogeneous. There may be two reasons for this finding between groups. First, the structure of the program that creates a family or group atmosphere is conducive to success in college (Schlossberg et al., 1989). Students in this study seem to care about each other and a great deal of comraderly existed at each college. Support for each other seemed to abound at each college. This concept is supported by students “mattering” to the institution (Schlossberg et al.). Second, faculty were high on the list of influencing factors for both the traditional and non-traditional students. Schlossberg et al. were convinced that faculty are key to
survival of non-traditional students. They stated: “We are increasingly convinced that faculty are the first line ‘interventionist’ for adult learners. How they respond and relate to adult learners will be critical in how learners perceive themselves and the institution” (p. 247).

Faculty are first-line participants in every student’s success. However, in a program such as radiography the contact is more frequent and occurs with a smaller number of instructors than is typical of other associate-degrees at the community college. This may account for the degree of program success and institutional satisfaction indicated by both traditional and non-traditional students in this study.

**Recommendations for Future Research**

This study examined the difference between the success of traditional students and non-traditional students in associate degree radiography programs in five Virginia community colleges. Considering the complexity surrounding educational success of non-traditional students, further study should be made regarding the success of these students. Further research questions may include:
1. Are there social factors that influence the molding and success of traditional and non-traditional students in radiography programs?

2. Are there differences in success rates between traditional and non-traditional students regarding post graduate job performance?

3. In a regional or national study are there differences in success rates between traditional and non-traditional students in radiography programs?

4. In a study with expanded variables, are there differences in success rates between traditional and non-traditional students?
REFERENCES
REFERENCES


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APPENDICES
August 15, 1997

Shirl Lamanca, R.T.(R)
Program Director Radiography
Virginia Western Community College
Colonial Avenue
Roanoke, Virginia

Dear Shirl:

Enclosed you will find the proposed focus group questions that I plan to use for interviewing the radiography students for my dissertation. As mentioned previously, names will be kept anonymous and no data will be reported regarding who said what etc., and each student will be given one of the attached forms before the focus questions allowing them to leave if they so desire.

Please review the enclosed draft detailing the purpose of the focus group interviews and the agenda for my dissertation. When you review the questions feel free to make any suggestions regarding content and any concerns you may have regarding the focus group questions. If you could please return your suggestions and comments to me by August 28, so that I can test the questions in a pilot project before beginning the interviews in September.

Again, I am grateful for your help and participation in this work. The data gathered will be available to all programs for their review and assistance in working with traditional and non-traditional students enrolled in radiography.

Best Regards,

Ron Proffitt, R.T.(R)
Program Director, Radiography
SVCC
APPENDIX- II
QUESTIONS for FOCUS GROUPS

1. What is your definition of success? (oq)
2. What do you look for in a college radiography program? (oq)
3. Describe the process of admission into the radiography program. (iq)
4. What personal goals did you hope to achieve from completion of a radiography program? (iq)
5. Describe your perceptions on first entering the radiography program. (tq)
6. Share the influence program faculty had on your matriculation in program. (tq)
7. What motivated you to enter and complete the radiography program? (tq)
8. How important were personal finances to you during the program? (kq)
9. Describe the impact your family had on your matriculation in the radiography program. (kq)
10. Describe your thoughts on the assistance and guidance you received from community college in pursuit of the radiography
11. How did the method of teaching and instruction by the faculty affect your learning? (kq)

12. Describe how you prefer to prepare and study for classes. (kq)

13. What impact did work responsibilities have on your completion of the program? (kq)

14. What would you like to add to today’s discussion? (eq)

Focus group questions should go from general to specific.

Categories of questions are:

- opening question(oq)
- introductory questions(iq)
- transition questions(tq)
- key questions(kq)
- ending questions(eq)
FOCUS GROUP INTERVIEWS

The following sections will discuss each of these 12 themes or perception and include direct quotations from students to amplify the understanding of students' perceptions regarding these topics. No quotes are repeated from any individual participant for the topics, and every effort was made to insure separation of non-traditional from traditional students.

Perceptions of a Good Program. Students were asked to describe what they perceived as a good program. Traditional and non-traditional students alike indicated that the influence of the instructor or teacher was a high-ranking factor in defining a good radiography program. The influence and assistance of clinical practice by staff and clinical instructors was noted. There were minor differences in perceptions between the two groups. Descriptive words almost entirely related to the instructor.

I agree, I think what would help most is that our teachers are very flexible, but I would like to add that we
should have a kind of program, but not program, but radiographers that are in our clinical site, they should have some kind of schooling or like a course on how to handle students, most of the things are pretty good, but we have radiographers that really don’t want to deal with students, so they do it because they have to do it, but they don’t really want to teach. If they tell you something they expect you to know the next time and this is really hard especially when you are new in the program and when you are new in a clinical site and you don’t know what is going on in the hospital. It is very hard, so that is all I have to say.

**Non-Traditional Student**

Good teachers that are willing to help and understand and we can come to them if we do have questions or problems, the clinical facilities, if there are techs that are willing to help or if they don’t want to then they make it very obvious and that is not good.

**Traditional Student**
I think what makes a good radiography program is one that has I agree with what like (name removed) said a lot of clinical hours as well as the school hours are important also, I also what helps to make a good radiography program is to have a site where clinical instructors are extremely supportive of their students. I did come from the first clinical site that I was at, wonderful clinical instructor who was there for her students and that is a boost your self-esteem and allows you to see more about the program and increases your interest and I think that is really one of the most important.

Non-Traditional Student

My definition would probably be a program where you learn all your basic knowledge of positioning you know x-ray, knowing "you know", your specials, then formal, no not formal but "you know" like a crash course in your specialty, your patient care.

Traditional Student

A good radiography program would be one that would offer you the abilities to do all types of
radiography, not only technical but also the positioning, physics, and even the emotions that go along with it.

**Non-Traditional Student**

One that would teach you the skill to help you be the best in your profession.

**Traditional Student**

**Personal Goals.** Both traditional and non-traditional students expressed that getting a job was the number one personal goal at program completion. Preparation for the job ranked high as well. The majority of both groups expressed interest in continuing their education in specialty areas of radiography such as ultrasound, magnetic resonance imaging, computerized tomography, and nuclear medicine. Two traditional and seven non-traditional students expressed hope of completing a bachelor's degree after completion of the radiography program.

First and foremost I hope to find a job that is a good job at a reputable hospital with good decent pay and something that will challenge me.

**Non-Traditional Student**
A good job and the ability to further my education and to specialize.

**Traditional Student**

Either earn my Bachelors or specialize.

**Traditional Student**

My goals are pretty much to continue with diagnostics and specialize in something else as well. Today I don’t think you have much of a choice unless you have more than one modality under your belt and that is pretty much the ticket nowadays, so I am looking at pretty much either MRI, CT, or angio and stay current in diagnostics as well.

**Non-Traditional Student**

My goals, I agree with everyone else, to actually say that I will have a degree, with three children and I have long term goals, again I would like to continue and head towards nuclear medicine. I recently have been toying with applying to a university or maybe with the Virginia Commonwealth University to achieve a Bachelors or even go further to MD, my grandfather was a doctor, seems
like it is very rare in minority families sometimes, so I would like to pursue it. It is a long term goal and I am not sure if I am heading in the exact direction, I have to toy a lot with family, I think if I was to have started in my young life I would be a doctor (laughing).

**Non-Traditional Student**

My goal is to complete the program and with good grades and I plan specializing in CT and MRI and one big goal is to get a good job (laughing by group).

**Traditional Student**

Perception on Program Entry. A number of common expressions by both traditional and non-traditional students occurred upon entry into the radiography program. Because these programs are limited-enrollment programs, students were excited and happy at being admitted to the radiography program. Their surprise at the difficulty of the curriculum and clinical expectations led to an initial feeling of inadequacy. Most students expressed a feeling of anxiety or fear upon program entry. The majority of students were surprised at the amount of work required for the program.
Scared just like anybody else and being out of school for so long and having been like straight to school for like six semesters just to get into the groove it was really difficult for me and the first time looking at a radiograph not seeing anything, I mean, yeah, really, it was just scary looking at the first radiograph. I looked at the chest and didn’t see much of anything and now it is not a problem.

**Non-Traditional Student**

I was terrified at all this new terminology and I was like maybe I don’t belong here.

**Traditional Student**

My first perception it was first intimidating, there was a lot to learn in a short period of time. I didn’t know if I would be able to learn it all. When you come to clinicals it all seemed to work out.

**Traditional Student**

Oh, no bad question (everyone laughing) major anxiety. I was scared it was too much for me. I was not
good enough for this program, I wasn't going to be able to handle the workload, I didn't know if I was going to manage going to school full time, trying to work part-time. I didn't know if I was going to be accepted in a hospital atmosphere. I didn't know how I was going to react to anything, I was very scared and nervous and didn't know if I was going to make it through the program. I hung in there and I am really doing really good, so obviously I made it.

Traditional Student

Oh, first I was very excited and then I when I walked into class I just wanted to see someone over thirty(everyone laughing). But anyway, I was frightened and probably in lots of ways I still am, but it is just that we are a really close group, we are very supportive of each other and always have been, if you have a problem there is always somebody that will talk you through it and I am just, I guess, I was scared and I am still a little scared and I love it.
Non-Traditional Student

I was scared, but I was glad and it is nothing like I thought it was going to be, but I love it.

Non-traditional Student

I knew from the beginning it was going to be tough and I knew I was going to have to do a lot of studying more than usual which I wasn’t expecting to do as much as I had to do (laughing) when I got here, but it all worked out for the best.

Traditional Student

Motivations for Program Completion. Student expressions regarding motivational factors were related to family and self-motivation. Traditional students mentioned often that self-motivation was a factor in program completion. They also frequently mentioned a parent or family member as either a positive or negative motivational factor in program completion.

Non-traditional students mentioned self-motivation as well but were less likely to use this as a primary factor. Non-traditional students wanted a fulfilling job and to meet family needs or expectations.
Both groups indicated that the diverse specialties beyond
the two year program were motivational factors that kept them
on track toward program completion.

Self motivation and my family and friends and my desire
to earn a degree and complete my education.

**Traditional Student**

A lot of self motivation and a lot of educational goals I set
for myself and were very important to my late wife also.

**Non-Traditional Student**

I spent twenty-four years in one career and I just, it
didn't work, so I, this is something I have always wanted
to do and never had time, never could afford to, leave the
money I was making, so this is the motivation end of it
and determined that I am going to get to the end, one
way or the other.

**Non-Traditional Student**

What motivated me was this is really bad to say, I didn't
want to be like my Mom. I didn't want to have to depend
on a man my entire life. I didn't want to be like so many
people, you see I am only 22, but I see so many girls my
age already that are pregnant and you know multiple boyfriends and all of this stuff I did not want to be like that. I didn’t want to be you know 30 or 40 years old married and depending 100% on some man to support me. I wanted to support myself. I want to take care of myself. I want to be able to take care of me and you know eventually if I do get married and everything I still want to be able to contribute to the family and I want to have a part-time job, but still want a personal life, a job helps me to feel better about myself. It gives me confidence and I think makes me a better person and that is what motivated me to get into this program. I just grew up seeing my Mom, she stayed home and she took care of a family and God forbid if anything ever happened and my Dad was to leave, my Mom would have no where to go and I don’t want to end up like that. That’s what motivated me to get into this program.

**Traditional Student**

I would have to say self-motivation, what am I trying to say? It comes from four years of doing hair and not
making any money, I wanted a college degree from it and my boyfriend is a, he is an excellent help and my family, my Dad always told me I could never go to college because of my grades in high school, so I proved him wrong.

**Traditional Student**

The various aspects of radiography is just interesting to me. I have always wanted to do it.

**Non-Traditional Student**

It motivates you, there are different ways to go in radiography, different fields you can go into that makes it interesting to stay. While you stay in it the more possibilities you have.

**Traditional Student**

I just wanted a professional career, I didn’t want a to be working in a factory. If I had stayed in (name of town) I would have ended up working in a factory from 7 to 3 and I mean that is ok for some people, but it wasn’t what I wanted for myself and I just want to be a professional.
It was not unusual for comments like the following to emerge from the non-traditional student. Often these remarks occurred after the completion of the interview but were occasionally captured, as the one that follows.

supportive, my mother and father are very supportive, but my husband has given me a tough time through all of this. My main motivation as (name) said in the very beginning to be dependent, I have been very dedicated to my family. I have worked very hard and I feel that I have supported them through a lot through the years having three children, and I feel it is my time and that is selfish I know, but it is my time. I feel that the benefits will pay off in the long run for my children and for my daughter especially because she is a very smart individual and she has been a straight “A” student through elementary school. I would like to encourage her as an individual to pursue her dreams as a young lady, also being an African American to pursue your dreams you want first before trying to pursue life with a family.
I don't regret it, but it is very difficult and I go through trials and tribulations probably all the way up through graduation I will go through it. I am not sure whether my other half will be there at the end, but this is my goal is to succeed on my own, to be able to provide this on my own.

Non-Traditional Student

Faculty Influence. Both traditional and non-traditional students overwhelmingly expressed positive influence of the radiography faculty on their education and personal lives. Interview comments from both the traditional and non-traditional students were very similar in their theme. The traditional student acknowledged the abilities of the faculty to teach the subject matter and make it understandable to everyone. Non-traditional students offered similar comments but were more inclined to indicate a lasting relationship with the instructor and an appreciation for flexibility in teaching. Both found the program faculty to be supportive and encouraging.
I think I have been well taught and good lectures from my instructor. Having an instructor that makes you, you know that wants you to learn and will not give up until you have learned it (laughing) that helps a lot and then have a clinical instructor that is always there willing to help no matter what she is doing or anything and I think that has helped a lot, most of all has probably been the little off side lecture on life (laughing) has helped me, it has.

**Traditional Student**

I think the majority of the students here, I mean the majority of the faculty here are willing to go out of their way to make sure everyone learns what they need to learn and their willingness to spend extra time, the extra time it takes for you to learn.

**Non-Traditional Student**

Well the only thing I want to say is when I graduate and finish this program I will really, really miss my instructors and I feel I can keep in touch with them all the time, because they are the best. Especially Mr.
(name) I mean, I love him to death, they are very good to us.

**Non-Traditional Student**

I agree with them and like when I have a problem I can go to Ms. (name) and she really helps me out and even though Mr. (name) because they know that I have a problem with the English language, still like at clinical they are really nice.

**Non-Traditional Student**

The faculty have a big influence on you. If they praise you, you want to do better, if they put you down it makes you feel worse and you do worse. But if you get a pat on the back every once and a while, it makes you feel like you have accomplished something.

**Traditional Student**

I think the faculty here have been very supportive. Especially Ms. (name) and Mr. (name) when we had him for film critique (laughing) we would all be nervous and he make us so relaxed and easy to go through everything, I don’t think we could have made it without either of
those two of our instructors.

Non-Traditional Student

Financial Factors. Traditional and non-traditional students alike expressed concern regarding financial obligations while enrolled in radiography. Traditional students expressed less concern for financial obligations than did their non-traditional counterparts. Those students indicating difficulties were most often supported by parents regardless of traditional or non-traditional status. Non-traditional students often worked or relied on savings for tuition and living expenses. Many traditional students were relying on financial aid to assist with tuition and/or living expenses.

I had to seek financial aid and also my parents helped me immensely, I worked for years and was able to save money and it is very hard to not to have a paycheck coming week to week. It is very hard you know, because I use to live from week to week on paychecks and now it is not there so my parents have helped me out a whole lot.
Non-Traditional Student
My parents pay my college costs and I work part-time.

Traditional Student
I haven’t had any real obstacles.

Traditional Student
My parents help me a lot, books and my tuition cost and I work part-time as well to help out.

Traditional Student
I wouldn’t say that I had any financial obstacles, my parents paid. I wouldn’t be anywhere without my parents of course. I don’t work enough to pay for hardly anything. My parents are the ones who pay the tuition and they see that the bills are paid and they are the ones who help me through it and I don’t use financial aid or anything like that, my parents pay for everything (laughing).

Traditional Student
Well, I went from making good money to having a part-time job and when I first went back to school I was married and with that fact I was not able to get
financial aid because of our combined income. I had no help from him, it was my decision to go back to school so I had to pay for it. I was lucky enough that I didn’t have to pay most of my living expenses, just school. It was hard working part-time to come up with the money to get school paid for and now I am back paying my own bills so it is kind of you know a Catch 22. You get financial aid or you don’t get financial aid and it has been rough. I am working two part-time jobs and you know it is totally 30 hours a week and my clinicals... it is really rough you know I haven’t cleaned house in probably three months now (laughing). Who has time for that? I am in school all day every day and I work some place just about seven days a week.

**Non-Traditional Student**

I got financial aid, student loans and I work as many hours a week as I can without interfering with my classes.

**Traditional Student**
I have had to get three student loans and I got financial aid and I have been working part-time the whole time.

**Traditional Student**

**Work Impact.** The impact of work appears to take a toll on both the traditional and non-traditional students. Both complain of work interfering with their study and personal life. The traditional student indicated work was to aid in living expenses. Most were working part-time and receiving money from parents. The non-traditional student worked to sustain a home. The reasons indicated were for family insurance and assistance to a spouse in maintaining the expenses of a home. The majority of both categories of students were employed part-time.

I had to stop working because it interfered with grades and trying to get all of the studying done.

**Non-Traditional Student**

I was working part-time up to thirty hours a week until about two months ago and it had a negative impact.
I work between twenty and thirty hours a week, it is really difficult, especially living an hour away.

**Traditional Student**

I started working approximately a month ago and since then I have had to cut my hours from about twenty-four a week to probably down to about eighteen because it was too overwhelming.

**Traditional Student**

Well I do work just to have insurance me, my two children and my husband. I only work like ten hours. I did work more than that, I worked fifteen hours a week last year but fortunately I work only one day a week to have insurance, no money I don’t see any pay check or anything, everything goes to insurance.

**Non-Traditional Student**

I work and it is very difficult sometimes for time for yourself. I never had to work any weekends, but now I work sixteen hour shifts on weekends, it is harder to find any free time. I am not married and until I get out of
this program I am never going to find anybody (laughing, others laughing).

**Traditional Student**

I work during weekends, in connection with my school but it still takes time to study and I don’t have time for study because I work during the weekends and after that I get tired when I go home I am ready to flip.

**Non-Traditional Student**

**Family Impact.** The responses from interviewees illustrated major support from family for traditional and non-traditional students. Parents were consistently mentioned as providing encouragement as well as financial support regardless of the age of the student. Mothers were frequently singled out as being especially encouraging and supportive, followed by fathers. The literature supports this notion of varied family support (Schlossberg et al., 1989). Non-traditional students often expressed guilt regarding the time taken from their children.

My mother has always been a big impact on my life. She has always motivated us and told us you know, there is
always better out there, you will always have to do your best and she kind of motivates me to get in back to school and then my oldest sister has really helped me out, she is you know anytime I have a question or anything she is in the medical field so she can help me out to some extent. She is always there and always calling me when I am down or something she always, she will call me and tell me at least you didn’t do five years like I did so.

**Non-Traditional Student**

When I decided to go back to school my whole family pushed me, motivated me to go ahead and go through it and whatever I need while I am in school they are there to help me make sure that I get what I need and they motivate me to stay in and complete the program.

**Non-Traditional Student**

My late wife was a teacher for many years and she thought it was a waste of potential if I didn’t go forth with my education.

**Non-Traditional Student**
My mother is my biggest inspiration and she is a nurse. 
At first I thought I wanted to be in the nursing program, but I realized that it was just because she did. Now that I am in the x-ray program I see that I want to do the nursing program too so (laughing, others laughing) for myself and not for her. I think that is a better reason so I probably will go on and do that.

Non-Traditional Student

Well everybody has been really supportive, my wife, my Dad, my Mom, everybody, yeah. They are really really wonderful. My Dad came from Venezuela two months ago and he helped me with a few bills, just to keep going and that is what I am doing.

Non-Traditional Student

My parents are my biggest inspiration, they always, they are always telling my sisters and I how to make a career for ourselves. Because they labor and they just don’t want to see us and they are always there as far as like I need help financially, then I have to work, but there has been times when I wanted to stop the program because I
needed money and they would help. They say I am hard
headed (laughing) so I keep on going because I can.

**Traditional Student**

My family has been very supportive and encouraging and
they, they would do anything to help me get through it.

**Traditional Student**

I remember my Mom and my sister and brother. My
Mom is really supportive, she helps me do things that I
can't do during the day if I am not there, like fix meals,
iron my clothes out for me, give me a ride if my car is not
working or something like that she helps me a lot.

**Traditional Student**

Well my mother went through a health science program
through the college and she is the one who really turned
me on to taking it. She has been really supportive as far
as getting through the program.

**Traditional Student**

As far as my family, I guess it is my parents. They you
know they pretty much supported what I wanted to do
you know they just you know tell me to keep studying

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hard and you know they supported me throughout the whole thing.

**Traditional Student**

During the focus group interviews an underlying theme regarding the spouse emerged that affected non-traditional married students. The interviewer was frequently questioned by several groups at post-interview regarding how other married students maintain relationship with their spouses.

My family has some mixed emotions when it comes to this decision. My teenage son knows what my goals are and goes along with it, he himself being a student. On the contrary my wife has different view of the situation and because of that I am now a single parent being divorced.

**Non-traditional Student**

My parents are very, very supportive, my Dad is so excited because of five kids my Dad and myself, well I am the only one of five of us that actually graduated from-- getting a degree. My sister did something else with a certificate program and my Dad graduated from college while I was growing, so he is just really excited,
my kids, my son keeps saying Mom when your done you are going to start working and you are not going to give me any time. But I told him I am not going to work too much. My husband, last year I went through a little bit of what (name) did and I guess it was this summer or spring we almost at the separation point and I just talked to him (crying) and as soon as I told him how I felt he knew I was serious, he totally did a 360 and came around and he helps with the kids and gives them baths when I have tests, he so good now, totally different and I pray that (name) gets some support (crying).

Non-traditional Student

The decision to go back to school after working six years was solely my decision. My husband at the time was not supportive in many ways at all. He said if you are going back to school you are going to pay for it and if I come home complaining about grades well you are the one who wanted to go back to school. I heard that for two and one-half years and he was the most unsupportive person in my life at the time. On the other hand his
family and my family have stood behind me every step of the way. I still talk with his sister who works in the lab at (place), so she knew of the stresses of going to a health care program.

**Non-Traditional Student**

**Community College Impact.** Traditional and non-traditional students both had some difficulty in providing ways that the college impacted their lives. They most often mentioned a counselor as helpful in assisting them with administrative needs at the college. Students frequently recounted the program faculty and directors of the various programs. They spoke regarding help and assistance for enrollment, registration, and other student administrative needs. These were most often provided by the program faculty or directors.

The counselors and the faculty in the program are very helpful.

**Traditional Student**

I think the counselors were helpful in pointing me in the right direction as far as radiography went.

**Traditional Student**
I talked with my counselor and she was very helpful and encouraging, she gave me all the information I needed and told me what I needed to do and who I needed to see.

**Non-Traditional Student**

The most service I have gotten other than from the radiography program is through the counseling services.

Where to go for a Bachelors degree.

**Non-Traditional Student**

The faculty and staff technologist.

**Traditional Student**

The only help I have had is from my advisor.

**Traditional Student**

I think the faculty was very helpful and as far as they push you to do your best, so I think they have a big impact and they are a lot of help. The entire faculty even the counselors and stuff you know set a goal and they help to achieve it.

**Non-Traditional Student**
The college was very helpful, especially to someone who hadn't been in school for fifteen years. The counselor was great and made me feel very comfortable.

Non-Traditional Student

Well the program faculty are very helpful, as far as the counselors and the rest of the faculty they can't really help us in radiography, but they do seem to respect the program a lot.

Traditional Student

Instructional Impacts. The researcher found this question to have the most consistent answers for the focus group interviews. Traditional and non-traditional students were consistent in regarding hands-on activities as the most helpful and key instructional tool for learning radiography. Repetition was frequently cited as important to these learners. Non-traditional students indicated that visual aids such as Power Point was helpful in learning.

A lot of hands on examples, a lot of visual aids, films, overheads, things like that and a lot of repetition over
and over until it stuck.

**Non-Traditional Student**

Hands on, repetition, visual aids as far as using the skeleton helped.

**Traditional Student**

Probably the clinical, the hands on actually doing it instead of reading it.

**Traditional Student**

At the beginning of the program we had classes that involved lecture, that, it is not that I found the information boring, but after a few hours of listening to one person talk something is going to go. We had positioning labs which I enjoyed in that it is a way of hands on experience and without feeling intimidated by critical atmosphere. As far as clinical goes, like I said early when we had some free time we, you know when I have a problem with various other stuff like when the clinical instructor can go and just practice radiography all day long if we wanted or head work which is another slow point for me. As far as the senior
year has gone the instructors use of Power Point which I thoroughly enjoy and she makes a copy of the slides for us with the lines so that you can write your own notes which I also enjoyed, it is easy to follow. It gives you something to look at, the graphics and everything, it is really nice, instead of her going on for hours.

**Non-Traditional Student**

The focus groups were all asked if a particular instructional or teaching style was helpful in learning, and, if so, they were asked to identify the style. Instructors who used an interactive approach to teaching, visual aids, and analogy, and who kept lecture to a minimum were most often cited as having the preferred teaching style. The only students to mention lecture as a preferred style were traditional students. The non-traditional student always clarified by some description that indicated an interactive style such as group work, analogy, visual aid, or interactive classroom. Deegan, Tillery & Associates (1985) identified collaborative learning, hands-on, and interaction with the instructor as preferred styles for community college students.
The analogy, hands on.

**Non-Traditional Student**

Analogy, where you take something and relate it to something helps a lot, labs, experiments has helped a lot and the case studies has helped a lot.

**Traditional Student**

I think I learn best by visualizing things and someone really working with me and showing me how to do it, the best ways to do it and I learn best with repetitiveness, doing it over and over again.

**Non-Traditional Student**

Yeah, I like being active in class rather than listening to lecture all the time. We got to use what they were going over and could understand it a lot better.

**Traditional Student**

I would say hands on, probably analogy, and also the visual aids. You know when you have a cathode and an anode and actually have it there to look at that gives us something to actually see rather than looking at a picture in a book.
Non-Traditional Student

I learn best by listening in class and actually going in and doing the things.

Traditional Student

A lot of repetition at the clinical sites and classroom. I have to sit for a lecture, if I skip the lecture I can't grasp the concept if I read it on my own I need it lectured to me and I my mistakes pointed out. I don't know for some reason it sticks in my head.

Traditional Student

I don't do very well on my own I need someone to explain it to me.

Traditional Student

Study Methods. Traditional and non-traditional students in these focus groups indicated they preferred to study alone in a quiet area. Over 80% of the non-traditional students preferred to study alone; less than 20% used group settings. Over 70% of the traditional students preferred studying alone and in a quiet area, with less than 30% using group study. Traditional students used flash cards, notes, and rewriting of notes to
prepare for class. Non-traditional students used outlining of chapters and review of tape recordings to prepare for class.

I study by myself, I need to just block off a certain amount of time and shut myself up in my room and read the chapter and the notes and just try to get the main points to memory.

Traditional Student

I definitely study alone in a quite area, I tried studying in a group once and you are not focusing. You are on someone else’s problems, you don’t really get your own questions or research done.

Traditional Student

Well I need to make myself understand everything. I can’t really study in a group before I understand something and then that will enforce the learning. I really have to learn it by myself.

Non-Traditional Student

For me I prefer to study in private, but sometimes if I don’t understand it then I will go to my friend and they will help me out and because I have a problem
sometimes at taking notes, because the teacher talks too fast, I will tape record so that when I come home and what ever I am missing, I tape record it and I just feel it in that way I have complete notes.

**Non-Traditional Student**

I prefer to study by myself too, but things like Mr. (name) physics, I read it and try to do the work and then I share my answers with fellow students.

**Non-Traditional Student**

I study better by myself. I like flash cards, I rewrite my notes, I read eight or ten times before a test to prepare myself. I find that memorizing it over and over again helps me to learn it more and then when I am ready to take a test I can visualize my notes on a piece of paper and I can do better and I just do better that way.

**Traditional Student**

**Other Influences.** At the end of each focus-group interview, students were given the opportunity to comment on previous questions or any other issue they felt important to the discussions. The majority of traditional and non-traditional
students expressed positive feelings about the program they chose. They were complimentary of the program faculty and of the education they had received. The experience of the focus group seemed to give them an opportunity to express publicly what was on their mind. For several it appeared to be a catharsis that brought relief and closure to a variety of personal feelings. Clearly, all focus groups had strong friendships and they demonstrated all indications of being a strong cohort. New friendships and sharing of interest is not uncommon, especially for non-traditional students (Schlossberg et al., 1989).

Well I am very happy, I never thought that this program was going to be the way it is, everybody is supportive, everybody tries to help you to get through the program. I am really happy that I am here and I am happy that I have this group. I don’t know if every class has a big group that we have but I wanted to think that I am lucky to be in this year with this group to be with the crowd that I am with now and the good instructors.

Non-Traditional Student
I think in general this program is very good and I feel after I do complete it that I will be well prepared for the work place and that I could go on and specialize in anything I wanted and be well prepared.

**Non-Traditional Student**

I agree people don't look up to a community college, but I feel that I will be prepared or more prepared than most people starting in a profession.

**Traditional Student**

I really love the program. I love the clinicals and I can honestly say I probably learned more at clinicals than I did from the classroom setting. There it is a lot different than going into the lab and positioning an adult student. At clinicals you have to get to know the patient and you have to get the history. You work with all different kinds of patients and figure out how to handle different situations. I think this has helped me a lot. I think I am doing really well for myself and I plan on doing better. I plan to go on and specialize, but overall I really like it.

**Traditional Student**
I have enjoyed the program. I appreciate all the patience from the instructors. Looking back a lot of work has been done. A lot of accomplishments have been made. There is a lot more work to do but I think the program is going to prepare all of us for that and I am looking forward to the challenge.

Non-Traditional Student

Concern was expressed for the rigors of the program and the amount of academic and clinical work students are expected to complete in a two-year radiography program. A great deal of discussion occurred on and off the record regarding clinical instruction. Traditional and non-traditional students expressed concern about the help and assistance they received from staff technologists at the clinical sites. Many students expressed concern over the lack of interest shown by staff technologist regarding student learning.

You have to give 100% if you are going to make it because it is like everyday you have to make yourself study when you don’t want to and just takes a lot to do it.

Non-Traditional Student
You definitely have to make this a priority or you will not succeed the way you should.

Non-Traditional Student

Have to set your priorities, this program just takes it all you know. You don’t really have too much of a life and if you want to get through it you have to say hey I am going to get through it, that is going to have to take a back seat for a little while.

Non-Traditional Student

You feel like you don’t have a life and you have to have some kind of outside life. But as a whole I feel like I have a life but after I finish the program then you will have a big reward in the end.

Traditional Student
VITA

RONNIE E. PROFFITT

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- Holston Valley Community Hospital School of Radiologic Technology, Kingsport, Tennessee - Graduated 1963.

PROFESSIONAL CAREER:

- Chief Technologist - Community Hospital of Roanoke Valley, Roanoke, Virginia, September 1967 - September 1973
- Technical Director - Lewis-Gale Hospital, September 1973 - September 1975
- Administrative Director Radiology, Bristol Regional Medical Center, Bristol, Tennessee, March 1992 - January 1993
- Program Director Radiography - Southwest Virginia Community College, Richlands, Virginia, September 1975 - March 1992; January 1993 - Present

AWARDS:

- Selected Virginia Outstanding Radiologic Technologist, V.S.R.T. - 1983
- Selected Who's Who Among Scholars in American Community, Technical and Junior Colleges - 1987
- PTK Faculty Leader Award - 1991
- Selected Outstanding Faculty Member, Southwest Virginia Community College - 1991 and 1994
- Who's Who Among Americas Teachers - 1996