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A Study of the Impact of the Associate of Applied Science Degree on the Region Served

by Walters State Community College

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

Michael Stephen Helmick

December 2005

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Keywords: Associate of Applied Science Degrees, Workforce Development,
A.A.S. Degree, Business and Industry, Training

ABSTRACT

A Study of the Impact of the Associate of Applied Science Degree on the Region Served by
Walters State Community College

by

Michael Stephen Helmick

This study investigated the impact a community college associate of applied science degree from a rural college in east Tennessee has on the area served by the college. Variables explored in this study included residence location, employment status, employment location, salary range, and advanced degree persistence.

The population for this study included all Summer 1999, Fall 1999, Spring 2000, and Summer 2000 Associate of Applied Science graduates from Walters State Community College. Data for this study were collected via a student survey and information gathered from the student information system database at the college. All hypotheses were analyzed using descriptive techniques appropriate to the data analyzed, including chi square, Mann-Whitney *U*, and Kruskal-Wallis *H* tests.

Based on the analysis, the Associate of Applied Science graduates do have a positive impact on the Walters State Community College service delivery area. Associate of Applied Science graduates tend to reside in the area, are employed in the area, have reasonable salaries, and many work toward advanced degrees.

DEDICATION

I dedicate this dissertation to Melinda Moore Davis, my wife, my love, and my boon companion. I have drawn strength from you, as I have struggled through the writing of this document and through the educational leadership program at East Tennessee State University. Melinda, you have been unfailingly supportive of my endeavors, and I appreciate it.

ACKNOWLEDEMENTS

I want to thank Dr. Hal Knight, chair of my dissertation committee, for his help and guidance in writing this document. I would also like to thank the members of my committee, Dr. Terrence Tollefson, Dr. Carroll Hyder, and Dr. Glenn Bettis for the time each of them spent reading and rereading this dissertation. I appreciate all the help and guidance that the chair and each member of the committee gave to me during the process of writing this dissertation and during my doctoral class work.

I also want to thank the Walters State family for all of their support during the lengthy process of creating this dissertation. I would especially like to thank Dr. Jack Campbell for encouragement and permission to perform this study. I literally would not have finished this document without the moral support and encouragement of Dr. Mary Lou Apple, a mentor, great leader, and wonderful boss. Many thanks, also, to Dr. Debbie Scott for proofreading and statistical guidance, to Dr. Nancy Gray-Barnett for encouragement and proofreading, Marcia Hostler, for proofreading, and to Jim Damewood for help in locating all those hard-to-find references.

Finally, I would like to thank my wife, Melinda, for all of her help in proofing this document countless times and her assistance in helping me make sense of a complicated study.

CONTENTS

	Page
ABSTRACT.....	2
DEDICATION	3
ACKNOWLEDGMENTS	4
LIST OF TABLES	8
Chapter	
1. INTRODUCTION.....	9
Statement of the Problem.....	15
Research Questions.....	15
Significance of the Study	16
Delimitations	16
Assumptions	17
Limitations	17
Definitions	17
Overview	18
2. REVIEW OF LITERATURE	20
Legislation Affecting Community College Technical Programs	23
The A.A.S. Degree at the Community College	28
The Students Who Attain or Pursue and A.A.S. Degree	31
The A.A.S. Degree and the Workforce	35
The Local Workforce	39
Summary	44

Chapter	Page
3. METHODOLOGY.....	45
Introduction	45
Population	45
Data Collection	46
Research Hypothesis	46
Research Methods	47
Data Analysis	49
4. ANALYSIS OF DATA.....	53
Goodness of Fit	53
Proportion of Degree Types	54
Proportion of Graduates by Term	56
Analysis of Residence Location	57
Analysis of Residence Location and Employment Location ..	58
Analysis of Employment Location and Degree Earned	59
Analysis of Salary Range and Degree Earned	61
Analysis of Degree Earned and Employment Category	64
Analysis of Salary and Employment Location	67
Analysis of Degree Earned and Advanced Degree Persistence	68
Analysis of Student Perception of Degree’s Impact	69
5. SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS	72
Summary	72
Residence of Graduates	73

Residence Location and Employment Location	73
Employment Location and Degree Earned	74
Salary Range and Degree Earned	75
Degree Earned and Employment Category	76
Salary and Employment Location	77
Degree Earned and Advanced Degree Persistence	78
Student Perception of Degree's Impact	78
Conclusions	79
Recommendations	80
For Practice.....	80
For Future Research	81
REFERENCES	84
APPENDIX	91
Student Survey	91
VITA	93

LIST OF TABLES

Table	Page
1. Chi square Goodness of Fit for Type of Degree	56
2. Chi square Goodness of Fit for Semester Graduated	57
3. Residence Location	58
4. SDA Residence and Employment Location	59
5. Cross Tabulated for Type of Degree and SDA Employment.....	60
6. Degree Type and Salary Range Mean Rank	62
7. Salary Range and Degree Type	63
8. Degree Type and Employment Category	66
9. Residence Location and Salary Range Mean Rank	68
10. Degree Type and Advanced Degree Persistence	69

CHAPTER 1

INTRODUCTION

Workforce development has been a key goal of the community college since the first postsecondary, two-year school was started over 100 years ago. In writing about the early years of the community college, Koos (1970) indicated that one of the three purposes for the creation of a community college was the “preparation for occupations” (p. 20). The community college has, for years, provided local workforce training by creating occupationally oriented degrees for students whose goal is to become better paid, more highly skilled workers. If the community college has had a positive impact on the area it serves and the workforce, there should be evidence that would support such a claim. If the impact has occurred and is continuing, then it should be evident that students and local business and industry are supporting the community college programs by attendance from the former and the hiring of graduates by the latter.

According to a report from the National Council for Occupational Education, “Postsecondary occupational education, including the associate of applied science degrees increased dramatically between 1960 and 1970” (*Criteria for Excellence, 1985*, p. 4). In 1992 over 60% of the degrees granted by community colleges in the United States were in occupational areas (Cohen & Brawer, 1996). According to Phillippe (2000) approximately 73% of community college associate degrees conferred in 1996-1997 were in areas other than general studies, most in occupational areas. Students continue to enroll in community colleges for reasons other than to transfer to a 4-year college or university. VanDerLinden (2002) indicated that in 1999 and 2000 21% of students enrolled in community college did so in order to transfer to a four-year school.

Historically, one of the degrees included in the occupationally oriented designation is the Associate of Applied Science degree (A.A.S.) (Koltai, 1984). This degree combines some general education requirements with a large number of career specific courses that prepare students to become more skilled in their area of vocational interest. The number of credit hours required for the A.A.S. degree varies by state, but there are recommended guidelines for general education course content and for technical area content (*Criteria for Excellence*, 1985). Developed in cooperation with business and industry in the college's Service Delivery Area (SDA), the A.A.S. is considered by some to be a beneficial degree for developing a local workforce (Coronado, 1996). Though the A.A.S. is substantially different from other degree offerings at the community college, it has often not been considered separately when data were reported. Therefore, it has been difficult to accurately gauge the impact the A.A.S. degree has on the local SDA and to evaluate the success of the students who obtained this degree.

Worker training by the community college has been in high demand for many years. According to a 1996 national employer survey (Zeiss, 1997), conducted in cooperation with the American Association of Community Colleges, there has been and will continue to be a need for workforce training at the community college level. This survey indicated that for the next 10 years, 74% of the industries surveyed would have a need for more technical and/or computer training of their employees. Based on results from a national survey reported in *The Skills Gap* (2001), over 45% of manufacturers indicated they turn to the community college when looking for technical training for their employees. These national reports predicted there would continue to be a need for the kind of training offered by the community college in areas other than the industrial sector

as well. According to the February 2004 report from the Bureau of Labor Statistics, the job with the most projected growth between 2002 and 2012 was registered nurses with A.A.S. degrees (*Bureau of Labor Statistics, 2004*).

There are state and national studies that indicate postsecondary education leads to better employability and higher wages. A recently completed 10-year study of displaced workers in Washington stated that a person who had at least one year of community college technical education could expect to raise his or her earnings an average of 14% for men and 39% for women (Jacobson, LaLonde, & Sullivan, 2002). According to *The Tennessee Department of Labor – Labor Market Information* (2004), a person in Tennessee who held an associate's degree in 1997 earned \$5,700 more per year than a person with a high school diploma. In 1998, persons with associate degrees had lower rates of unemployment (2.5%) than persons with only high school diplomas (4.0%) (*Tennessee Dept. of Labor*).

The community college has usually offered several options for students who wish to pursue college-level coursework after completing a high school diploma or General Equivalency Diploma (GED). Students who planned on completing two years of college and then transferring to a university usually pursued an associate in arts (A.A.) or an associate in science (A.S.) degree. According to the *Walters State 2004-2005 Catalog/Student Handbook* (2004), both the A.A. and the A.S. degrees at Walters State Community College require 41 hours of general education coursework and at least 19 hours of coursework in a designated area of emphasis. By contrast, the A.A.S. degrees at Walters State Community College require 15-17 hours of general education coursework

and at least 43 hours of coursework in an area of emphasis (*Walters State 2004-2005 Catalog/Student Handbook*, 2004, p. 51-52).

The A.A.S., originally developed to be a terminal degree, was designed for the student who wants a two-year degree, but generally was not going to pursue a four-year degree (Cohen & Brawer, 1987). Many students with an A.A.S. have pursued four-year degrees, but in order to do so they must take additional general education courses required by the articulating institution. The A.A.S. offers the student a large number of credit hours in courses that are directly tied to technical training for their area of emphasis. Many of these courses are practical in nature, and theory is taught as it applies to the field of study. The A.A.S. degree at WSCC is "...designed for the student who desires to enter employment upon graduation and does not intend to transfer to a baccalaureate degree program" (*Walters State 2004-2005 Catalog/Student handbook*, 2004, p. 52). In the 1999-2000 school year there were 321 A.A.S. graduates at Walters State Community College, with most of these graduates (94%) going immediately into the workforce (*WSCC Fact Book*, 2002).

One additional occupationally-oriented option for the community college student is the certificate program. With this option, a student pursues a specific course of study that contains few, if any, general education courses. The emphasis in the certificate programs is on job preparation or national certification preparation (*Walters State 2003-2004 Catalog/Student Handbook*, 2002).

The general consensus among community college administrators is that A.A.S. programs, with their close ties to a local area and their heavy use of industry-based adjunct faculty, are very proficient at filling the technical training needs of local business

and industry (Grubb, Dickinson, Giordano, & Kaplan, 1992). Skolits (2000) indicated that in the 1998-1999 school year, Walters State Community College provided training for 150 local employers by offering coursework for 2,738 students enrolled in technical majors. According to the *Walters State 2003-2004 Catalog/Student Handbook*, (2003), A.A.S. degrees at Walters State Community College were offered in: Computer Science, Industrial Technology- Drafting, Industrial Technology-Electrical, General Technology, Industrial Technology-Manufacturing, Business, Hotel/ Restaurant Management, Culinary Arts, Accounting, Legal Assistant, Office Administration, Nursing, Nursing Career Mobility, Physical Therapist Assistant, Respiratory Care, Early Childhood Education, Law Enforcement, Production Horticulture-Greenhouse Management, Production Horticulture-Golf and Turfgrass Management, and Fire Protection.

Analysis of data gathered from surveys sent to Walters State Community College graduates showed that the majority of students were satisfied with their education (*TBR Report Card- State of Tennessee*, 2000). However, there has been no study supporting the claim that those persons who finish an A.A.S. degree are more satisfied with their community college training than persons who have earned a different degree or certificate at WSCC. Much of the data gathered by WSCC on student and employer surveys were not reported separately for A.A., A.S., A.A.S. and certificate programs. This trend seemed to be followed by other data reporting agencies as well. The Department of Labor and other agencies that gather national data did not differentiate between the success rates of individuals based on which two-year degree they earned. They frequently assigned all two-year degrees to the same category, the associate degree. There was a difference in the composition of A.A.S. degrees when compared to other associates degrees. Rojewski

(2002) asserted that the A.A.S. degree, with its emphasis on career related programs of study, has a different purpose than the A.A. or A.S. degree, and should be studied as a different category much as the baccalaureate degree has been considered a different category from the master's degree when performing research.

This researcher initially became interested in determining the impact of a community college on a local workforce after reading two studies that reported findings that indicated universities did not do a good job of training a local workforce. These studies found that many university graduates moved away from the university when they sought post-graduation employment and so do not become a part of the local workforce (Bound, Groen, Kezdi, & Turner, 2001; Whitfield, Pitter, & Howat, 2001). Community colleges, on the other hand, claimed to do a good job of training local workers by providing degree programs designed to place students immediately into local jobs (Cohen & Brawer, 1996; Rojewski, 2002). Although there appeared to be a high level of community college A.A.S. graduate satisfaction, there was little evidence that suggested much of an impact on the SDA. Zeiss (1997), Jacobsen et al.(2002), and Rowjeski reported data that indicated a high level of satisfaction for community college A.A.S. graduates, but they did not aggregate the data based on the geographic location of the graduates and the specific area of concentration of the graduates.

Statement of the Problem

Although there is a substantial amount of information available about the role of the community college in workforce development, there is very little work that specifically addresses the impact of the A.A.S. degree on the community college service delivery area (SDA). For community college administrators who seek to improve their school's impact on the community, knowing how well A.A.S. graduates fare in the local economy is a vital piece of information.

The purpose of this study is to determine what impact the A.A.S. degree programs offered by Walters State Community College have on the region of Northeast Tennessee that comprises the college's service delivery area (SDA). The region served by the college has a significant number of manufacturing, health care, agricultural, and other businesses that provide employment for people in the region, including the college's A.A.S. degree graduates.

Research Questions

The following questions guided the study:

1. Is there a difference in the number of A.A.S. graduates who reside inside the SDA and those who reside outside the SDA?
2. Is there a difference in the residence location of A.A.S. graduates and the employment location of the graduates?
3. Is there a relationship between the type of A.A.S. degree graduates earn and the employment location of graduates?

4. Is there a relationship between the A.A.S. degree graduates earn and the current salary of graduates?
5. Is there a relationship between the type of A.A.S. degree graduates earn and the job category in which graduates are currently employed?
6. Is here a relationship between the employment location of graduates and the salary graduates earn?
7. Is there a relationship between the type of degree graduates earn and the graduate's persistence toward an advanced degree?
8. What impact did the A.A.S. degree have on the career of the graduates?

Significance of the Study

Since their inception, community colleges have been involved in local workforce development. There have been many programs provided by Walters State Community College that were tied to this initiative. In order to ensure that these programs remain viable, it is important that major stakeholders in northeast Tennessee have some assurance that a local economy is benefiting from the training provided by the community college. This study examined what impact the A.A.S. programs at Walters State Community College have on the SDA by tracking graduates post-graduation and detailing their economic, educational, and career progress.

Delimitations

In order to allow an adequate amount of time for graduates to have entered the workforce and to be adequately employed, this study concerns only Walters State

Community College A.A.S. degree graduates for the Summer 1999, Fall 1999, Spring 2000, and Summer 2000 semesters. A comparison of graduates from more recent years might unfairly skew the results toward those graduates who, having been employed for a longer period of time, would probably show more success in the workplace.

Assumptions

1. Each respondent to the survey will respond candidly and the information that he or she gives will be correct.
2. Information gathered from the student information system (SIS) at Walters State Community College is accurate.

Limitations

The focus of this quantitative study is limited geographically to the 10-county SDA for Walters State Community College and chronologically to four semesters, Summer 1999, Fall 1999, Spring 2000, and Summer 2000. The sample from which these data were gathered may not be indicative of other community colleges or other time periods. Conclusions drawn from this study address issues in local workforce development for the Walters State Community College SDA only, and generalizations to other community colleges should not be made.

Definitions

The following definitions are used as a framework for the study:

1. Graduates – those students who completed an A.A.S. (Associate of Applied Science) degree at Walters State Community College during the time span of the study.
2. Associate of Applied Science (A.A.S.) degree – A two-year degree program at Walters State Community College in one of the following areas: Computer Science, Industrial Technology- Drafting, Industrial Technology-Electrical, General Technology, Industrial Technology-Manufacturing, Business, Hotel/ Restaurant Management, Culinary Arts, Accounting, Legal Assistant, Office Administration, Nursing, Nursing Career Mobility, Physical Therapist Assistant, Respiratory Care, Early Childhood Education, Law Enforcement, Production Horticulture-Greenhouse Management, Production Horticulture-Golf and Turfgrass Management, or Fire Protection.
3. SDA – The service delivery area for Walters State Community College including the Tennessee counties of: Claiborne, Cocke, Grainger, Greene, Hamblen, Hancock, Hawkins, Jefferson, Sevier, and Union.

Overview

In 1983, *A Nation at Risk* called for educational renewal as a way to restore “...our unchallenged preeminence in commerce, industry, science, and technical innovation” (*A Nation at Risk*, 1983). After 20 years the nation still seeks educational renewal as a way to improve the nation’s workforce and the community college is seen as a major contributor to this effort (D’Amico, 2003; Hoxby, 2003). This researcher will use this study to not only explore the viability of the A.A.S. programs at Walters State

Community College but to establish baseline data for future studies at the college.

Further, this study offers a methodology for other community colleges to replicate and help determine the success of their A.A.S. programs.

Chapter 2 of this study is a review of the literature. The review begins with an historical view of technical programs at the community college level and the legislation that explains their origins. Also, contained in this chapter are explorations of studies that touch on the success of workforce training in community colleges and universities. Finally, some explanations will be included that relate to several national and local studies that explore how workforce training in the United States is progressing.

Chapter 3 describes the research design and methods. Research hypotheses are presented as well as an explanation of the data collection methods and procedures.

Chapter 4 is an analysis of the data gathered from the surveys administered to graduates from the 4 semesters in 1999-2000 and from the Student Information System at Walters State Community College. Analysis will be presented in data tables.

Chapter 5 presents the conclusions and recommendations made as a result of this study.

CHAPTER 2

REVIEW OF LITERATURE

There has been a growing concern among national educators, business leaders, and national leaders that the United States was not keeping pace with the rest of the world when it came to educating their workers (Grubb et al, 1992). If workers are to be prepared to take their place in the future, highly technical occupations, they must be provided an education that match the demands of industry (*The Skills Gap*, 2001). According to the *Criteria for Excellence in Associate of Applied Science Programs* (1985), the community college, long considered a leader in local-community education, offered a variety of degrees that help students find their place in the world of work. The same publication asserted that the Associate of Applied Science degree is one degree option for students who wish to enter the workplace with advanced skills.

In 2003 the community college movement celebrated its 100th birthday (D'Amico, 2003). The definition of what was first called a two-year college, then a junior college, and finally a community college has changed over the lifespan of the movement. The original purpose of the community college was to provide two years of pre-university education for high school graduates, allowing the universities to concentrate on upper level and graduate courses (Koos, 1970). Even though the community college began as a preparation for university, it soon became a place where vocational training, based on the community's needs, was offered (Cohen & Brawer,1996).

In the beginning of the community college movement, most two-year colleges were small, closely connected to the community, and often funded by local municipalities (Witt, Wattenbarger, Gollattscheck, & Suppiger, 1995). Often, two-year colleges were

located in the same buildings as the local high schools and were thought of by some as grades 13 and 14 (Cohen & Brawer, 1996). Even though early two-year colleges were dedicated to providing a pre-university education for local students, it soon became apparent that the college could provide students more postsecondary options.

In 1898, William Rainey Harper, the creative mind behind what later became the community college stated that, "...many students were likely to terminate their education after completing junior college in order to seek positions as teachers or to go into business" (Witt et al., 1995, p. 39). Harper and others argued for a terminal degree that would allow a student who chose to pursue a path in industrial training, agriculture, or other vocational areas as an alternative to the four-year university degree (Witt et al.). It was this desire to develop a local workforce that eventually caused the creation of college-level, vocational-specific training and the development of the terminal associate degree and certificate programs (Witt et al.). In 1924, Koos conducted a study of junior college catalogs and determined that 50% of the colleges were offering some sort of "...terminal vocational training" (Koos, 1970, p. 21). It was evident by the early 20th century that the terminal associate degree had become a viable degree option in the United States and had become a cornerstone of the junior college program offerings (Koltai, 1984).

The name of what is now called the community college has changed several times since its inception. At first known simply as two-year colleges, these postsecondary schools soon became known as junior colleges, because they were seen as primarily offering the beginning of a college experience (Cohen & Brawer, 1987). Bogue (1950) offered the following excerpt from the 1925 meeting of the American Association of

Junior Colleges which illustrates how the definition of a junior college was broadened to include something besides a pre-university offering: “The junior college may, and is likely to, develop a different type of curriculum suited to the larger and ever-changing civic, social, religious, and vocational needs of the entire community in which the college is located” (p. xvii). The junior college developed into the community college, partially because of the perception that the two-year college was closely tied to local interest and to educating students according to the wants and needs of local business and industry (Rojewski, 2002).

In 1947 President Harry Truman commissioned a study on the state of higher education in the United States. *The President’s Commission on Higher Education Report* (1947) added impetus for the growth of what became known as the community college (Witt et al., 1995). A strong push for more two-year colleges, still frequently called junior colleges, began in the 1950s and continued strongly for the next 20 years. In 1980 the American Association of Community and Junior Colleges (AACJC) officially defined the community college as, “...any institution accredited to award the Associate in Arts or the Associate in Science as its highest degree, that definition includes the comprehensive two-year colleges as well as many of the technical institutes, both public and private” (Cohen & Brawer, 1996 p. 5). It should be noted that the new definition excluded the public area technical schools and proprietary technical training centers because, in part, they lacked accreditation by a regional college accrediting agency (Cohen & Brawer, 1996). The AACJC officially changed its name to the American Association of Community Colleges (AACC) in 1992, forever shedding the name junior (Witt et al.). In 2003 there were over 1,100 community colleges in the United States accredited by a

regional college accrediting agency (*Community College Fact Sheet*, 2004). Most of these colleges offered Associate in Arts (A.A.), Associate in Science (A.S.), Associate in Applied Science (A.A.S.), certificate, and non-credit training, all designed to accommodate the needs of their local community (*Community College Fact Sheet*; Rojewski, 2002).

Legislation Affecting Community College Technical Programs

According to Cohen and Brawer (1996), community colleges, though closely tied to local communities, were influenced and partially funded by national mandates, particularly vocationally-oriented mandates designed to help meet the educational needs of a growing country. The Smith-Hughes Act was one legislative act that was designed to foster growth in vocational programming. Cohen and Brawer (1996) wrote: “The 1939 Commission on Junior College Terminal Education noted that, at least 62 colleges in fourteen states were receiving federal funds that had been appropriated under the 1917 Smith-Hughes Act and the 1937 George-Dean Act” (p. 222).

In addition to legislation, there were other outside influences that caused the technical programs at community colleges to experience a flux in their growth in the 1930s and 1940s. As the country went to war in 1942; there was a decline in the total number of college-age men and women available to attend college, enrollment fell dramatically, and some colleges closed (Witt et al, 1995). Witt proceeded to highlight the flux in enrollment by writing: “...after the enrollment for most junior colleges peaked from 1939-1940, it declined steadily for three years” (p. 120). Further, though most colleges experienced a decline in enrollment during the war years, the California

community colleges, “...grew dramatically, due to the training needs of the huge munitions industry” (p.121), located in that state. Because many of the men in the country were away fighting, unskilled women were pressed into service and were major recipients of community college technical training. For many of these women, it was their first experience in the workforce and their first introduction to postsecondary education (Rojewski, 2002).

After World War II, perhaps the biggest boon to the community college was the passage of the Serviceman’s Readjustment Act, commonly called the GI Bill (Witt et. al, 1995). Through this act, former soldiers were guaranteed the right to attend college or technical schools to receive postsecondary education in the area of their choice, and college enrollment “skyrocketed” (p.121) as a result.

In 1957, the Russians launched Sputnik, beginning the race for space and highlighting the need for Americans to have better knowledge of science and mathematics (Cohen & Brawer, 1996). Congress reacted in 1958 by passing the National Defense Education Act designed to improve student’s education in science, engineering, math, and technology (Dougherty, 1979). Motivated by fear of a foreign superpower, this act precipitated a national awareness of the inability of the American educational system to adequately prepare its students to be globally competitive in several key areas (Witt et al. 1995). The community college benefited from this program by receiving an influx of money to improve math and science programs, both for the transfer student and for the terminal degree student (Cohen & Brawer, 1996).

Although increasing the enrollment in math and science classes would eventually improve the workforce, there remained a demonstrated need for skills training at the

community college level (Rojewski, 2002). The Vocational Education Act of 1963 ushered in an era of vocational education opportunities for all students, including those who were in community college terminal degree programs, and provided funds to build new facilities to support these programs (Cohen & Brawer, 1996). According to Bragg (2001), the purpose of the Vocational Education Act was to foster vocational education program growth and innovation for postsecondary and high school programs, with a goal of developing the nation's workforce by supplying the demands of emerging industries.

Continuing revisions to the Vocational Education Act in the late 1960s and early 1970s provided additional funds for technical programs and mandated that special consideration be given to disadvantaged populations that included women and minorities (Cohen & Brawer, 1996). This influx of federal money made the 1960s a period of high growth for technically oriented schools. Across the country many technical schools that later became community colleges were started with federal grant money made available during this decade (Witt et al., 1995). The growth of schools and programs occurred so rapidly that there was concern about the duplication of efforts by some schools and failure to provide funded services in other schools. This concern resulted in a Government Accounting Office (GAO) report issued in 1972 indicating that greater accountability would have to be required in future legislation (*Training America's Labor Force*, 1972). To facilitate this accountability, a national data system was developed in the 1970s that allowed schools to more accurately report student participation in federally sponsored programs (Bragg, 2001).

The GAO report heralded the call for greater accountability in education, and in the 1970s and 1980s, demand continued for educational reform. Terrel H. Bell, who was

United States (U.S.) Secretary of education in 1981, created the National Commission on Excellence in Education to address what was considered the “long and continuing decline in the quality of American Education” (Holton, 2003). *A Nation at Risk* (1983), a report on the condition of America’s schools, was published by this commission and the conclusions drawn in the report were a harsh indictment of the American education system. American students, when compared to their European and Asian counterparts, were found to be lacking in their educational skills generally, but specifically in the areas of math and science (*Interim Report to Congress*, 1994). Parnell (1985) observed that as the country moved into a more technically demanding era, the education system was not producing workers who were competitive in the global workforce. He also noted there that perhaps the wrong students were going into vocational programs. Perhaps, he observed, the middle two quartile students should be pursuing rigorous postsecondary vocational programs instead of a university degree. He noted that the middle two quartile students frequently were not prepared to do university-level work, nor were they prepared to enter the workforce with a high degree of skill. With no marketable skills this “neglected majority” increasingly began to be considered underemployed (p. 15). Parnell proposed reforming high school and college-level vocational programs and directing these students into professions that would suit their capabilities and help make them productive members of the workforce.

To help combat the shortage of highly skilled workers, the Carl D. Perkins Vocational Education Act or Perkins I was passed by Congress in 1984 (Buzzell, 1990). This act sought to equalize educational opportunities for many disparate groups and to encourage students to pursue vocational career paths at the secondary and postsecondary

level by providing funds for innovative transition programs (Lynch, 2000). Perkins I also put accountability measures in place to ensure that federal money was being spent in the manner prescribed by Congress and the GAO report (Buzzell). In 1990 and 1998 amendments to Perkins I were passed by Congress (Rojewski, 2002). Dubbed Perkins II and Perkins III respectively, these amendments went even further in providing education for America's workforce, mandating cooperation between secondary and postsecondary technical programs (Hull & Grevelle, 1998).

Technical Preparation (Tech Prep) was at the heart of Perkins II. This program provided money and personnel to develop a series of initiatives aimed at a seamless transition from high school education, to postsecondary education, to the workforce (Evelyn, 2003b). According to Lynch (2000), community college degree programs, including the A.A.S. degree, have been a major focus of the Perkins legislation since their inception.

In 1994, the School-to-Work Act was passed by Congress (Jacobs, 1994). Finally enacted in 1996, this Act was developed primarily to provide funding and incentives for local education agencies (LEAs) to form partnerships with other LEAs, postsecondary institutions, and local businesses that would foster the development of a comprehensive education program (*A compilation of federal education laws volume IV*, 2003). This program would begin in the early grades and would continue through postsecondary education. It was designed to provide students with information that would lead them to make wise career choices based on their interest and abilities. One key element of School-to-Work was the opportunity for students to be exposed to local business and postsecondary educational institutions to sample a variety of career options (Jacobs).

Though School-to-Work ceased to exist as a nationally funded program in 2000, there are still some communities that supported the initiative through local funds (Bragg, 2001).

Federal legislation affecting community college technical programs has been in place since the early part of the 20th century (Cohen & Brawer 1996). Community colleges have had a major impact on workforce development and federal legislation that supports these goals has allowed a variety of programs to be developed which resulted in the training of thousands of students for careers in business and industry (Rojewski, 2002; Witt et al., 1995;).

One of the main purposes of federal legislation has been to foster innovation in education, especially in workforce education (Parnell, 1985). There is evidence to support the claim that community colleges have a significant impact on the workforce as measured by salary growth and advanced worker training (Jacobson et al., 2002; *The Skills Gap*, 2001) Many of the successful community college technical education programs currently offered came about as a result of federal legislation (D'Amico, 2003).

The A.A.S. Degree at the Community College

Postsecondary workforce preparation has varied from offering a person the minimum training to do a low skill job, to preparing someone for a highly specialized occupation requiring an advanced degree (Rojewski, 2002). The A.A.S. degree was developed to fill a gap that existed between the technical training schools and the university's baccalaureate degree (Koltai, 1984). The A.A.S. was and is a degree that appeals to many students who desire a job-related education. The A.A.S. degree was

designed to prepare students to enter the workforce in as little time as possible, but with training adequate to ensure success and promotion (Grubb et al., 1992).

Frequently, when research on educational degrees and success was reported, all two-year degrees were grouped together (Jacobson et al. 2002, Leigh & Gill, 1997). However, there is a distinction between the various two-year degrees that should not be overlooked or misinterpreted. Some two-year degrees are designed as transfer degrees. The A.A. and the A.S. were developed in the beginning of what is now the community college and were intended as the first two years of a four-year degree (Cohen & Brawer, 1996). Most students who received this degree and desired to earn their baccalaureate degree would transfer to a four-year college or university (Cowen & Brawer, 1996, p. 20). Though primarily offered at community colleges, the A.A. and A.S. degrees have for some time been offered at some four-year colleges and universities (Witt et al., 1995). When offered at these institutions the A.A. and A.S. are used to signify that a person has completed all the lower level requirements, and they are ready to transfer to the upper level of study (*Criteria for excellence*, 1985). To further cloud the issue of which schools offer which degrees, some states have recently mandated that community colleges could begin to offer baccalaureate degrees as an extension of their services to the community (Evelyn, 2003a). If this movement continues to grow it could "...drastically change the mission of a community college", and could make them more like regional universities (p.31).

The A.A.S. has been a two-year degree that was not designed as a transfer degree (Koltai, 1984). Many of the A.A.S. degrees currently being offered do articulate with colleges and universities, and many A.A.S. degree students do transfer to four-year

schools (Truesdell, 1997). Designed primarily to give students a minimum education in general subjects such as math, reading, composition, social science, and behavioral science, along with career specific courses, the A.A.S. has the main goal of educating students to enter the workforce upon graduation (Crosby, 2002). The definitions of an A.A.S. varies depending on where it is offered and the state and regional standards that govern its composition. In the state of Tennessee, the A.A.S. requires a minimum of 60 credit hours with most of the areas of study requiring less than 64 hours of credit to obtain the degree (*TBR Policies and Guidelines*, 2004). A semester credit hour in Tennessee is defined as 750 minutes of teacher contact. Generally speaking, a one credit-hour class meets one hour per week for 15 weeks, the length of one semester, to accomplish the contact hours required (*TBR Policies and Guidelines*). Some confusion on the course credit hour issue is bound to exist as other institutions may offer similar sounding credit for differing amounts of contact time. The issue is further confused by the recent influx of online courses where teacher-student contact frequently does not exist in the usual sense (*TBR Policies and Guidelines*).

Based on the recommendations from National Council for Occupational Education (NCOE), Tennessee is, for the most part, meeting the recommended national standards for A.A.S. degrees. NCOE recommended that A.A.S. degrees: be identified with a specialty designation (p. 4), limited to 60 to 72 hours (p. 6), and be responsive to employer needs (p. 5) (*Criteria for excellence*, 1985).

The Students Who Attain or Pursue an A.A.S. Degree

Kellogg (2001), reporting on a recent national study of high school freshmen, indicated that 90% of the students said they would attend college upon graduation from high school. However, only 44% of these same freshmen proceeded to take courses of study that adequately prepared them to pursue a college degree (Kellogg, 2001). The needs of the workforce are changing. According to a *Woodrow Wilson National Fellowship Foundation Report*, (2001) "...30 million students are being prepared for a future that has already vanished, in courses of study that lack rigor or coherence" (p. 4). A student who takes a pre-college course of study but does not then pursue a four-year degree is not prepared to enter the world of work, as he or she has only attained the skills that will allow him or her to pursue the next degree and then, this person has no marketable job skills (Grubb, 1996). The general population is aware of the need for students to pursue education beyond high school if they are to be prepared to enter employment and earn a living wage. In a 1999 survey of 1,000 adults, 73% stated that higher education is doing a good job of preparing students to go into the workforce (Hart & Teeter, 2003).

Very little data exist that specifically identifies A.A.S. students from all associate degree students. Some general conclusions can be made based on related studies. Approximately 42% of the first-time, full-time freshman students who entered college went to a community college in 2002 (*Community college fact sheet*, 2004). In 2002, community college students, with an average age of 29, earned more than 500,000 associate degrees (*Community college fact sheet*). More than half of the students in community colleges were women, and 30% of the full-time students worked more than

30 hours per week (*Community College Fact Sheet*). Leigh and Gill (1997) wrote that 75% of the associate degrees in the United States were vocational in nature and concentrated on business, health, and engineering technologies. Many A.A.S. students were reverse-transfer students, meaning they attended a four-year university and later transferred to a community college to pursue a different degree. Balfour (1984) found that in North Carolina in 1983, “5,216 students transferred from senior institutions to two-year colleges. Of these, 92% entered vocational programs” (p. 70). Several other state surveys showed similar results with students frequently transferring to community college programs from four-year institutions to pursue degrees that “boost their occupational skills” (*Counting the reverse transfer students*, 1985, p. 7). Many of the students pursuing an associate degree were already employed in the local workforce and worked more than 20 hours per week. Quinley and Quinley (2000) reporting on a series of statewide and national studies, summarized that characteristics of reverse transfer students as: “...typically male, white and over 40. Most had full-time jobs and were married and many had previously held professional or managerial positions” (p. 4). As a result, the students who pursued an A.A.S. degree took longer than the traditional two years to complete their degree. According to a 1997 study “...over forty percent of all students who entered college this year with the goal of achieving an associate degree will earn some degree or certificate within five years” (*Sub-Baccalaureate Persistence and Attainment*, 1997).

Many A.A.S. graduates went on to pursue a four-year degree with very good success. Cox and Harden (1989) found that A.A.S. transfer students who entered the University of West Florida showed a B.S. completion rate of over 48% when measured

five years after entering the university. Cox and Harden further reported that many of these students had been forced to attend college on a part-time basis due to job constraints resulting in the longer period of time for graduation. Truesdall indicated that over half of the A.A.S. students in an Oregon study began their program after age 22 and took longer than average to complete their first degree. Initially only 15% of the students in the study listed themselves as “originally being interested in transfer to a four-year school.” (Truesdell, 1997, p. 88). Truesdell asserts that by the time of the study 33% of the students were in graduate school after having completed both an A.A.S. degree and a baccalaureate degree. When considering the general learning ability of graduates, Thellman (2000) concluded that there was “...no significant difference in the reading, mathematical and critical thinking ability between students who are in community college A.A.S. programs and students who are in community college A.A. and A.S. degree programs” (p. 85).

In summary, there are a few statements that create a profile of the typical A.A.S. student. The typical A.A.S. student is more than 22 years of age, is attending school part-time, is working more than 30 hours per week, is just as capable of doing college level work as the other students, and has a good chance of pursuing and obtaining a baccalaureate or a higher degree upon graduation.

Students who have earned an A.A.S. degree have been shown to receive economic benefits as a result of their degree. Grubb wrote that, “Men with an associate degree earned 18% more and women earned 23% more than their high school counterparts” (Grubb et al., 1992, p. 49). A 10-year study completed in Washington State by the Federal Reserve Bank corroborates these findings. In that study, workers who had

a year or more of technically-oriented vocational and academic courses raised their earnings by 14% for men and 29% for women (Jacobson et al., 2002, p. 17). Carnevale (2000) found that almost 80% of associate degree graduates earn as much or more than four-year graduates, especially if the associate degree is in one of the emerging programs, such as digital systems or manufacturing technology. A recent study done in West Virginia showed that associate degree graduates in that state earn on average \$3,300 per year more than workers with a Ph.D. (*Two year certificate in W. VA earns more than doctorate*, 2003, p. 6). Bryant (2001) found that when comparing high school graduate's earnings to community college graduate's earnings, "...community college does improve earnings over and above what students would have earned had they entered the labor force with a high school diploma" (p., 4).

Finishing a college degree appears to be of paramount importance, as regards the future earning power of students. Bossel and Fredland (1999) found that a student in a four-year college who drops out of school before finishing his or her degree will earn less on average than a two-year college student who receives an associate degree. To support this claim, recent analysis of census data by Day and Newburger (2002) indicates that "...over an adult's working life, high school graduates earn an average of \$1.2 million; associate's degree holders earn about \$1.6 million; and bachelor's degree holders earn about \$2.1 million."

The A.A.S. Degree and the Workforce

Again, the American workforce is changing very rapidly. Just a few years ago there were plenty of jobs for people who were simply willing to work hard and little regard was given to the level of education of most of the workforce in the United States (Rojewski, 2002). In the past, workers on assembly lines in the various manufacturing sectors did work as it had been done for decades and the training for these jobs usually consisted of one worker showing another worker how things were done (Grubb et al. 1992). Repetitive, boring, and sometimes dangerous, many of the jobs in the United States paid well and there seemed to be a steady line of unskilled workers who were willing to perform the task for a paycheck. Beginning in the 1960s, the workplace changed (Grubb et al.). Manufacturers had to compete more and more with high quality goods that were imported from manufacturers outside of the United States. The quality and reliability of U.S. goods, formerly considered among the best in the world, now came under increased scrutiny (Deming, 1986). The automotive manufacturing industry is perhaps the best example of how businesses in the U.S. became non-competitive in the 1960s and then made a strong comeback in the 1990s, based on increased worker education and a strict adherence to quality (Chung, Mitchell, & Yeung, 2003). By employing elements of a process called Total Quality Management (TQM), the automotive industry influenced not only their own industry, but began to make changes in other, seemingly non-related industries as well (Walton, 1986).

Since the end of World War II, higher education in the U.S. had been trying to keep up with the ever-increasing demands of a growing population that clamored for more educational opportunities (Witt et al. 1995). By the late 1970s, it appeared that this

country was falling further behind the rest of the industrialized world when it came to educating our population to become workers in an increasingly high-tech, globally competitive workforce (Grubb et al., 1992). Industry in the U.S. was having trouble finding workers who had the necessary academic skills required to learn new manufacturing methods, and industry leaders turned to the government to find out what could be done about the problem (Quinley & Hickman, 2002). In 1981 Terrel Bell, the U.S. Secretary of Education, created the National Commission on Excellence in Education to investigate the quality of education in the U.S. In 1983 this commission published a report called *A Nation at Risk* (Cohen & Brawer, 1996). This report condemned the U.S. system of education for not educating the children of the U.S. to the standards of the rest of the world and made recommendations for changing the system (Holton, 2003). Hoxby (2003), writing about *A Nation at Risk* 20 years later, made several observations. She quoted Patricia Graham of Harvard University, a member of the original commission, as saying, “The report helped change the public’s perceptions about the role and importance of education” (p. 10). *A Nation at Risk* was the first time that a government-funded, national report called for strong workforce education reform. In writing about education’s role in developing this strong workforce, Hoxby continued, “...since 1983 the U.S. economy has become more skills based, making it more important that everyone get a good education” (p. 10). What *A Nation at Risk* detailed was that the workplace had changed. No longer could a worker learn a job with no academic background. According to Quinley and Hickman, “workers need a firm foundation in basic communication and computation skills and expertise in technical and other skills related to specific enterprises” (p.1). The new workplace demanded that the

worker participate more in developing the process of manufacturing and providing services for a growing economy (Deming, 1986). Restated, the new worker needed to not just “do”; he or she needed to understand what the individual was doing in relation to the whole operation.

There has been, and continues to be, a shortage of skilled workers in the United States. In *The Skills Gap 2001* (2001), the report began by stating that, based on a survey conducted in 2000, over 80% of the manufacturers in the U.S. report “...a serious to moderate shortage of qualified workers” (p. i). The report goes on to define what is meant by qualified and why employers reject applicants. Over 30% of the production worker applicants were rejected because of their poor reading and writing skills, while over 26% of the salaried workers were rejected due to “poor computer and technical skills” (p. 8). When discussing current employees, employers cited a need for skills improvement most often in reading, writing, and math. In the same report, over 50% of the employers claimed to be spending more on training than they did three years ago, and over 45% used community colleges to provide this training. In 2003 the National Association of Manufacturers (NAM) published a follow-up report to *The Skills Gap 2001* called: *Keeping America Competitive, How a Talent Shortage Threatens U.S. Manufacturing* (2003). In this report NAM identified which careers have a shortage of workers, why this shortage occurred, and what the possible long-term result of this shortage could do to the U.S. economy.

The worker shortage in U.S. manufacturing was primarily in the technically skilled worker area. Over 60% of manufacturers reported “...a serious to moderate shortage of qualified workers in the machinists, craft workers, technicians, and engineers

including engineering technicians” (*Keeping America Competitive*, 2003, p. 7). There was not an overall shortage of workers. There was a shortage of “qualified workers” (p. 5) that concerned the manufacturers. Most manufacturers surveyed found that workers they hired lacked the skills necessary to do a specific job and as a result, industry was faced with providing large amounts of training at their own expense. *Keeping America Competitive* stated “manufacturer respondents suggested that their preferred training providers for skilled workers are community colleges that are flexible and responsive to their needs” (p. 18). The report suggested that manufacturers use the community colleges for their training because they are able to provide all levels of training and adapt their programs to specific needs in industry. As for long-term effects of the worker shortage, the report, *Keeping America Competitive*, pointed out that manufacturing has one of the highest multiplier effects for job creation. The report stated, “...every \$1 million in final sales from manufactured products supports eight jobs in the manufacturing sector and an additional six jobs in other sectors such as services, construction and agriculture” (p. 22).

A worker shortage in U.S. manufacturing caused manufacturing firms to look to other countries for workers. The U.S. already imported a large number of foreign-born workers to fill their need for qualified manufacturing workers (Mosisa, 2002). According to *Keeping America Competitive* (2003), “A lack of highly productive, talented employees combined with the lure of low-cost labor overseas could accelerate the number of companies that shift their production to other nations” (p. 23). The report concludes by advocating that the federal government show more support for “...rigorous high school education and high school /postsecondary education partnerships” (p. 27).

Manufacturing was not the only area where a qualified worker shortage existed. According to Thomas Flynn, President of Monroe Community College in Rochester, NY, “The current shortage of nursing professionals affects every community, and community colleges are in the best position to assist in addressing this national problem” (Flynn, 2002). In addition to manufacturing and nursing, similar shortages existed in the areas of entrepreneurship (Skibelli, 2003), food production, public safety, information technology, and education (Rojewski, 2002), all areas where the community college made and still makes a significant educational contribution.

If the U.S. economy is to remain globally competitive, there must be a strong educational foundation to help businesses and industries grow. Community colleges are ideally situated to help educate the workforce in the U.S. and are considered the “...vanguard institutions in preparing workers and their companies for the challenges ahead” (Quinley & Hickman, 2002).

The Local Workforce

Public higher education in the state of Tennessee consists of two systems. The Tennessee Board of Regents (TBR) has jurisdiction over 13 community colleges, 6 regional universities, and 26 technology centers (*TBR Policies and Guidelines*, 2004). The University of Tennessee (UT) is a statewide university system and has five campuses across the state (*The Condition of Higher Education*, 2001). Overseeing both of these systems, as well as all private higher education institutions in the state is a third governing body, the Tennessee Higher Education Commission (THEC). THEC has the task, “... to achieve coordination and foster unity in higher education in this state” (*The*

Condition of Higher Education). Education in Tennessee has a direct impact on the quality of life and the economy. According to *The Condition of Higher Education in Tennessee*, people with college degrees “...exhibit lower crime rates, are more tolerant of diversity, participate in charities more and give back to their community in the form of community service more than people without college degrees” (p. 2).

The impact of community college degrees can be felt across the state. Associate degree holders in Tennessee in 1997 earned \$5,700 more per year than a person with only a high school diploma. In 1998 persons with an associate degree had a lower rate of unemployment (2.5%) than persons with only a high school diploma (4.0%) (*Tennessee Dept. of Labor-Market Information*, 2004). In the year 2000 there were 13,375 associate degrees conferred by the state’s community colleges. Of these, over 11,000 of the degrees were in job-related fields with the largest concentrations in business and health related areas (*The Condition of Higher Education*, 2005).

Walters State is a community college with an enrollment of approximately 6,000 students (*WSCC Fact Book*, 2002). The main campus is in Morristown, Tennessee, with branch campuses in Greeneville, Sevierville, and New Tazewell. The college offers a variety of associate degrees and certificate programs designed to prepare the student to transfer to a four-year university or go directly into the workplace (*Walters State 2004-2005 Catalog/Student handbook*, 2004). In 2003 A.A.S. degrees at Walters State Community College were offered in Computer Science, Industrial Technology- Drafting, Industrial Technology-Electrical, General Technology, Industrial Technology-Manufacturing, Business, Hotel/ Restaurant Management, Culinary Arts, Accounting, Legal Assistant, Office Administration, Nursing, Nursing Career Mobility, Physical

Therapist Assistant, Respiratory Care, Early Childhood Education, Law Enforcement, Production Horticulture-Greenhouse Management, Production Horticulture-Golf and Turfgrass Management, and Fire Protection (*Walters State 2003-2004 Catalog/ Student Handbook*, 2003).

In providing educational services, the geographic area that Walters State Community College covers includes the counties of: Union, Hamblen, Grainger, Hawkins, Cocke, Sevier, Hancock, Jefferson, Claiborne, and Greene (*WSCC Fact Book*). Located in Northeast Tennessee, this region called Service Delivery Area II (SDA II) serves a population that is mostly white and middle class and has an educational attainment level that is in the lower half of the state (*WSCC Fact Book; Tennessee Job Outlook*, 2001). On a Walters State Community College business and industry survey conducted in the summer and fall of 2000, the highest number of respondents indicated their business would be considered either a manufacturing or a service business (*WSCC Employer Survey*, 2001). Unemployment in the region is running close to the state average with the less rural areas having a lower unemployment rate than the average for the region (*The Source*, 2005). There were no data available that compared the level of education in SDA II to the unemployment figures, nor were there data that gave the earnings by education level for the area. There was evidence that most graduates, 94% in 2004, find employment, although it is not clear whether or not the employment they found is in the area for which they obtained their degree (*The Condition of Higher Education*).

The A.A.S. graduates from Walters State Community College comprise a large percentage of the total graduates from the college. For the school year 1999-2000 there

were 321 A.A.S. degrees conferred (*WSCC Fact Book*). This figure represents more than half of the graduates from this school year. The largest number of A.A.S. graduates came from programs in health related areas, business/management related areas, and industrial technology. Data on how many of the A.A.S. graduates transferred to a four-year university were not available, although it is known that in 2000, 285 students transferred from Walters State Community College to public four-year colleges in Tennessee (*WSCC Fact Book*). During the same year, there were also 73 reverse transfers, students who left public four-year colleges and transferred to Walters State Community College (*WSCC Fact Book*).

One definition of workforce development was stated as "... a community college initiative to provide current and future employees with the education, training, competencies, and skills that employers need to maintain high performance in a competitive market environment" (Ford, 2002, p. 34). Ford continued by writing that, in order to develop a local workforce, there must be, "...open and honest communication with internal and external stakeholders" (p. 35). Developing the local workforce has been accomplished at Walters State Community College, in part, by the use of advisory boards to keep the various technical divisions abreast of the changes in local industry and by surveying local industry as to their educational needs. When comparing the Walters State Community College business and industry survey results (*WSCC Business and Industry Survey*, 2000) with the program offerings at the institution (*Walters State 2004-2005 Catalog/Student Handbook*), it is clear that Walters State Community College is responding to the needs of the business community. There are currently degree offerings in every category where local business people said in 2000 they needed training (*WSCC*

Business and Industry Survey). No business mentioned an area that was not covered by a degree at Walters State Community College (*Walters State 2004-2005 catalog/student handbook*). The most recent report from the local Workforce Investment Act for region II (LWIA II) indicated that the fastest growing jobs that require an associate degree are in computer support, molding manufacturing, and police and sheriff's patrol (*Tennessee Job Outlook*, 2005). Walters State Community College offers associate degrees in areas related to each of these fields (*Walters State 2004-2005 Catalog/Student Handbook*).

The importance of local workforce development cannot be overemphasized. If an area is to be globally competitive, it must have a viable, educated workforce (Ford, 2002). In a series of editorials in the *Kingsport Times-News*, it was pointed out that Tennessee is lagging behind the rest of the country in developing its local workforce (*Tennessee Lagging Behind*, 2002). The economy is changing; it is becoming more global. If Tennessee is to become more globally competitive, then its workers must be trained to the best of their abilities. (*Tennessee Unprepared for New Economy*, 2002). These editorials advocated stronger partnerships between local industry and the community college. Community colleges, with their broad curriculum, may be the best place to train a local workforce and enrollment in these schools should be provided to local citizens, just as in secondary school education (*Keeping America Competitive*, 2003). Community colleges should be what W. Bruce Ayers, president of Southwest Community College in Kentucky calls "the people's college" (p.9) designed to work with the people in a community to help develop a local economy that is globally competitive (Baldwin, 2001).

Summary

The preponderance of literature does suggest that the community college is an active participant in local workforce development. The data available make it quite clear that community colleges do provide the necessary skills for workers in a variety of occupations and in a multitude of locales. However, there is no conclusive evidence that would indicate that graduates from community college A.A.S. degree programs have a positive impact on the local workforce. In most of the literature, conclusions about local workforce development almost always refer to the degrees that students earn as associates degrees. There is no evidence that would indicate that reference to associates degrees means only A.A.S. degrees or a combination of A.A.S., A.A., and A.S. degrees.

CHAPTER 3

METHODOLOGY

Introduction

Based on the literature, the Associate in Applied Science degree from a community college may have a positive impact on the area served by the college, the SDA. There is some evidence that supports the claim that an A.A.S. does increase the earnings of a worker and the person's rate of promotion. Although several studies dealing with workforce development exist, no studies were found that examined the effect of only the A.A.S. degree graduates on the SDA. Every study examined, grouped all A.A., A.S., and A.A.S. degrees together, with little or no attempt at treating the A.A.S. degree as a separate entity. The focus of this study was the 321 A.A.S. graduates from Walters State Community College in the 1999-2000 school year. I studied how these graduates have impacted the local workforce in the Walters State Community College SDA by measuring: first, whether graduates live and work in the SDA; second, whether graduates found employment in the SDA in their field of study; third, whether or not graduates found adequate paying employment in the SDA or whether graduates left the SDA for higher paying jobs; and fourth, whether graduates with an A.A.S. degree persisted toward an advanced degree. This chapter includes a description of the research design, population, data collection procedure, research hypotheses, and research methods.

Population

The population for this study included 321 students who completed an A.A.S. degree at Walters State Community College during the summer 1999, fall 1999, spring

2000, and summer 2000 semesters. The sample for the study was comprised of the 125 graduates (38.9% of the population) who responded to the survey.

Data Collection

Data were gathered based on a focus report run on the SIS system at Walters State Community College to gather background information on all graduates. Using the student addresses gathered from this focus report, a mailed survey was used to gather the desired information from the students. To ensure that the most accurate address for students were used, the SIS information was compared with addresses listed in the Walters State Community College alumni affairs database. Those surveys that were returned with a new address listed were mailed out again using the provided address. A record of survey non-responders was kept, and these individuals were contacted via mail twice after the initial survey was mailed to provide ample opportunity for all graduates to respond to the survey instrument.

Research Hypotheses

The following research hypotheses, written in null form, were derived from the research questions (pg. 15-16) and directed the study:

Hypothesis 1: There is no significant difference in the number of graduates who reside inside the SDA and the number of graduates who reside outside the SDA.

Hypothesis 2: There is no significant difference between the SDA residence location of graduates and the SDA employment location of graduates.

Hypothesis 3: There is no significant relationship between the type of A.A.S. degree a graduate earned and the current SDA employment location of the graduate

Hypothesis 4: There is no significant relationship between the salary range and the type of A.A.S. degree graduates earned.

Hypothesis 5: There is no significant relationship between the type of A.A.S. degree a graduate earned and the category of job in which the graduate is currently employed.

Hypothesis 6: There is no significant relationship between the salary and the employment location of graduates.

Hypothesis 7: There is no significant relationship between the type of A.A.S. degree earned and the graduates' persistence toward an advanced degree.

Research Question 8: What impact did the A.A.S. degree have on the career of the graduates? This question was addressed by compiling responses to an open-ended question that was part of the survey (See appendix A)

Research Methods

Prior to gathering any data, permission was obtained from the East Tennessee State University Internal Review Board and Dr. Jack Campbell, President of Walters State Community College, to pursue this line of inquiry using the methods I proposed.

Several methods of obtaining the data for this study were employed. First, I worked with the student records division at Walters State Community College to gather data from the student information system (SIS) about the graduates from the year 1999-

2000. Second, I developed a survey, delivered via mailing, to obtain information from students on their current employment, current residence location, salary range, and post-graduation educational pursuits. The variables listed below were used to help measure the impact A.A.S. graduates have on the SDA of Walters State Community College:

1. Degree earned;
2. Residence location;
3. Employment status;
4. Employment location;
5. Current salary range;
6. Type of employment;
7. Advanced degree pursuit;

The first step of this study was to work with the Student Records office at Walters State Community College to gather information from the student information system.

The second step in the study was to develop a database of graduates including addresses and degree granted.

The third step in the study was to verify the accuracy of the addresses by cross-checking the student addresses from the SIS system with addresses listed in the Alumni Affairs database.

The fourth step in the study was to mail out surveys to all 321 graduates listed in the SIS and Alumni Affairs database. Any surveys returned due to incorrect addresses were mailed out again if a new address was provided by the post office.

The fifth step in the study was to follow-up on any surveys that were not returned within a reasonable period of time. Non-responding graduates were mailed surveys for the second time after 30 days and for the final time after the next 30 days had elapsed.

The sixth step in the study was to transfer the data from the returned surveys to a spreadsheet in preparation for analysis.

The seventh step in the study was to test hypotheses 1 through 7 using the appropriate analyses.

The eighth step in the study was to analyze the data and report the responses for survey question 8 dealing with the student perception of the impact of the A.A.S. on the graduate's career.

Data Analysis

Data for this study were subject to analysis based on the requirements for each question studied. Each hypothesis was analyzed using the appropriate technique for measuring each variable.

To test for hypothesis 1, a comparison between the residence location of graduates was made to determine the residence location of graduates relative to the SDA. In order to determine whether a survey respondent lived inside or outside the SDA, respondents were asked to select a county of residence on the survey. The list included 17 Tennessee counties and one category listed as Other. The survey respondents were to select one of the counties as their primary place of residence, or if they chose Other as a place of residence, a residence location was to be written in. Any respondent who checked 1 of the 10 counties in the Walters State Community College SDA was counted

as living inside the SDA. Any respondent who checked any other selection was counted as living outside the SDA. A one sample chi square test was used to analyze the data.

To test for hypothesis 2, a comparison between the residence location and employment location of graduates was made to determine if a significant relationship exists between these 2 variables. In order to determine whether a survey respondent was employed inside or outside the SDA, respondents were asked to select a county of employment on the survey. The list included 17 Tennessee counties and one category listed as Other. The survey respondents were to select one of the counties as their place of employment, or if they chose Other as a place of employment, an employment location was to be written in. Any respondent who checked 1 of the 10 counties in the Walters State Community College SDA was counted as employed inside the SDA. Any respondent who checked any of the other selections was counted as employed outside the SDA. A 2 by 2 cross-tabulated table and the chi square test for independent samples was used to analyze the data.

To test for hypothesis 3, a comparison between the degree earned and the employment location was made to determine if there is a significant relationship between the degree a graduate earned and the employment location of the graduate. A 4 by 2 cross-tabulated table and the chi square test for independent samples was used to analyze the data.

To test for hypothesis 4, a comparison between the salary range and the type of degree was used to determine if there is a significant relationship between a graduate's salary and the degree he or she earned. The analysis was limited to those graduates who indicated on the survey that they were currently employed. The salary range categories

that were used when compiling data were listed in \$5,000 increments and each salary range was assigned a number from 1 to 18 with 1 being the lowest salary range and 18 being the highest salary range. Each survey respondent was asked to check the salary range that indicated the range in which his or her salary fell. A Kruskal-Wallis H test was used to analyze the data.

To test for hypothesis 5, a comparison between the type of A.A.S. degree a graduate earned and the category of job in which the graduate is employed was made to determine if there is a significant relationship between a graduate's earned degree and job category. There were four employment categories used for this analysis: Industrial, Business, Health, and Other. On the survey there were 10 response categories listed for the question: In what type of business or industry are you employed? Respondents checked one of the nine job categories as best fitting their area of employment, or he or she checked item 10, Other, and listed the job in the space provided. These 10 responses were sorted into the four employment categories. A chi square analysis for independent samples was used to analyze the data.

To test for hypothesis 6, a comparison between salary and employment location was made to determine if there is a significant relationship between a graduate's salary range and his or her employment location. A Mann-Whitney U test was used to analyze the data.

To test for hypothesis 7, a comparison between the type of degree and the persistence toward an advanced degree was made to determine if there is a significant relationship between the degree a graduate earned and their persistence toward earning an advanced degree. To determine whether or not a survey respondent was working on an

advanced degree, the respondents were asked to place a check mark in the blank next to one of five statements that best explained his or her effort toward earning a bachelor of arts, a bachelor of science, or a higher degree. The four statements were: I have earned an advanced degree; I am currently working on an advanced degree; I am not currently working on an advanced degree; and I have not done any work toward an advanced degree. The four responses were collapsed into two categories: (1) working on a degree or earned an advanced degree and (2) no advanced degree and not currently working on an advanced degree. A 4 by 2 cross-tabulated table and the chi square test for independent samples was used to analyze the data.

To determine response to research question 8 student responses to survey question #8 (see Appendix A) was used. The data and representative samples of responses will be reported under the heading, Analysis of Student Perception of Degree's Impact.

The statistical procedures and data analysis for this study are reported in chapter 4.

CHAPTER 4

ANALYSIS OF DATA

This study investigated the impact that an Associate of Applied Science degree (A.A.S.) from Walters State Community College has on the Service Delivery Area (SDA) of the college. The college's SDA consists of the following 10 counties: Cocke, Claiborne, Grainger, Greene, Hamblen, Hancock, Hawkins, Jefferson, Sevier, and Union. The college's SDA has a large number of manufacturing firms, health care facilities, and business concerns that provide employment for the residents of the area. For the purposes of this study, a positive impact on the region is determined by the number of A.A.S. graduates who indicated that they continue to reside in the area, have contributed to the economy of the SDA, and have shown improvement in their lives as a result of earning an A.A.S. degree from Walters State. In order to assess this effect, a written survey was sent to all Walters State Community College A.A.S. graduates from the summer 1999, fall 1999, spring 2000, and summer 2000 semesters.

Goodness of Fit

To gather data for this study, surveys were mailed to the population of 321 graduates. One hundred twenty-five of these graduates completed surveys, for a return rate of 38.9%.

In order to determine if the survey respondents were a representative sample of the population of the 1999-2000 graduates, a comparison of the observed sample to the population was made. Because the variables were nominal in nature and I was interested in comparing the frequency of occurrence in the sample to the frequency of occurrence in

the population, it was determined that a chi square Goodness of Fit test should be used to analyze this data. Chi square tested the proportion of degree types in the observed sample and the proportions of degree types in the population for Hypothesis A. Chi square was also used to test the proportion of semester degree earned in the observed sample with the proportion of semester degree earned in the population for Hypothesis B. In Hypothesis A, it was determined that as far as degree types were concerned, the observed sample was not significantly different from the population. In Hypothesis B, it was determined that as far as semester degree earned was concerned the observed sample was not significantly different from the population. Based on the results of the chi square Goodness of Fit, it was determined that the observed sample was not significantly different from the population and, therefore, the results of the study would be a representative sample of the population of graduates.

Proportion of Degree Types

Null Hypothesis A: There is no difference in the proportions of degree types between the observed sample and the population.

For this analysis the types of degrees were classified into four categories: Technical, Business, Health, and Other. The degree type category lists four degree designations. Each degree type represents A.A.S. degrees earned by students from several majors. The A.A.S. degrees earned by the graduates were part of the information gathered from the student information system (SIS). In the SIS each degree program has a three or four letter code. Each of these codes was assigned to one of the four degree types prior to compiling data, which means each degree type represents more than one

degree program or major. The degree type labeled Technical combined the following majors to produce the data for this category: Computer Science, Industrial Technology-Drafting, Industrial Technology-Electrical, General Technology, and Industrial Technology-Manufacturing. The degree type labeled Business combined the following majors to produce data for this category: Business, Hotel/ Restaurant Management, Culinary Arts, Accounting, Legal Assistant, and Office Administration. The degree type labeled Health combined the following majors to produce the data for this category: Nursing, Nursing Career Mobility, Physical Therapist Assistant, and Respiratory care. The degree type labeled Other combined the following majors to produce the data for this category: Early Childhood Education, Law Enforcement, Production Horticulture-Greenhouse Management, Production Horticulture-Golf and Turfgrass Management, and Fire Protection.

There were 20 graduates (16%) who earned a degree in Technical. Forty-one graduates (32.8%) earned a degree in Business. Forty-five graduates (36%) earned a degree in Health, while 19 graduates (15.2%) earned a degree in the Other area.

To assure that the assumptions of chi square were not violated, no more than 20% of the data category cells for this hypothesis should have an expected frequency of fewer than 5 and the expected frequency for each of these cells should be at least 1. For null hypothesis A, zero cells had an expected frequency of less than five, and the minimum expected frequency was greater than one. Therefore, the assumptions of chi square for this hypothesis were not violated.

A comparison between the observed proportions of the total sample (Observed \underline{N}) to the expected proportions of the overall population (Expected \underline{N}) for each degree

classification was made. The results of this analysis are reported in Table 1. There was no difference in the proportion of degree types between the observed (sample) and expected (population), chi square $X^2(3, N = 125) = 1.513, p = .679$. The null hypothesis is retained.

Table 1

Chi Square Goodness of Fit for Type of Degree

Degree Type	Observed <u>N</u>	Expected <u>N</u>	Residual
Technical	20	20.6	-.6
Business	41	35.0	6.0
Health	45	49.8	-4.8
Other	19	19.5	-.5
Total	125		

Proportion of Graduates by Term

Null Hypothesis B: There is no difference in the proportions of graduates by term between the observed sample and the population.

To assure that the assumptions of chi square were not violated no more than 20% of the data category cells for this hypothesis should have an expected frequency of less than 5 and the expected frequency for each of these cells should be at least 1. For null hypothesis B, zero cells had an expected frequency of fewer than five, and the minimum frequency was greater than one. Therefore, the assumptions of chi square for this hypothesis were not violated.

A comparison of the total sample (Observed \underline{N}) to the expected proportion of the overall population (Expected \underline{N}) for each term was made. The results of this analysis are reported in Table 2. As shown in Table 2, there is no difference in the proportion of graduates by term between the observed (sample) and the expected (population), $X^2 (3, \underline{N} = 125) = 3.702, p = .296$. The null hypothesis is retained.

Table 2

Chi Square Goodness of Fit for Semester Graduated

Grad Term	Observed \underline{N}	Expected \underline{N}	Residual
1999F	21	16.0	5.0
1999M	21	21.0	0
2000M	22	17.9	4.1
2000S	61	70.1	-9.1
Total	125		

Based on the analysis there was no significant difference between the population sample and the population on the 2 important variables; graduation term and degree earned. With this validation of my sample, I proceeded to analyze the data and test the 7 hypotheses detailed in chapter 3.

Analysis of Residence Location

Null Hypothesis 1: There is no significant difference in the number of graduates who reside inside the SDA and the number graduates who reside outside the SDA.

This analysis was designed to determine if there was a difference between the proportions of graduates who lived inside and outside of the Walters State Community College SDA. There were 92 (73.6%) graduates who lived inside the SDA and 33 (26.4%) who lived outside of the SDA. A one-sample chi square was used to test the null hypothesis that there was no significant difference in the number of graduates living inside and outside of the SDA. As shown in Table 3, there is a significant difference between the number of graduates who live inside and outside of the SDA, $X^2(1, N = 125) = 27.848, p = .001$. There were more graduates living inside the SDA than graduates living outside the SDA. The null hypothesis was rejected. There were no violations of the assumptions of chi square.

Table 3

Residence Location

Location	Observed <u>N</u>	Expected <u>N</u>	Residual
Inside SDA	92	62.5	29.5
Outside SDA	33	62.5	-29.5
Total	125		

Analysis of Residence Location and Employment Location

Null Hypothesis 2: There is no significant difference between the SDA residence location of graduates and the SDA employment location of graduates.

This analysis was designed to determine the difference between residence location and employment location of the graduates in the studied sample. Because a significant

number of the graduates live in the SDA, do these graduates also work in the SDA? A 2 by 2 cross-tabulated table and the chi square test for independent samples was used to test the null hypothesis. The analysis was limited to those graduates who indicated on the survey that they are currently employed. The results of this analysis are reported in Table 4. As shown in Table 4, there is a significant relationship between graduates' residence and employment, $X^2(1, N = 114) = 77.788, p = .001$. The strength of the relationship, as measured by Phi, was .83, indicating a strong relationship between the two variables. There are more graduates living inside the SDA and Working inside the SDA than either; graduates working outside the SDA and living inside the SDA or graduates living and working outside the SDA. The null hypothesis was rejected.

Table 4

SDA Residence and Employment Location

	Residence Inside SDA		Residence Outside SDA		Total	
SDA	n	%	n	%	n	%
Employment						
Inside	76	89.4	0	0	76	66.7
Outside	9	10.6	29	100.0	38	33.3
Total	85	100.0	29	100.0	114	100.0

Analysis of Employment Location and Degree Earned

Null Hypothesis 3: There is no significant relationship between the type of A.A.S. degree a graduate earned and the current SDA employment location of the graduate.

This analysis was designed to determine the relationship, if any, between the A.A.S. type of degree earned and the current employment location of the graduate. The analysis was limited to those graduates who indicated on the survey that they were currently employed. For this analysis the types of degrees were classified into four categories: Technical, Business, Health, and Other. A 4 by 2 cross-tabulated table and the chi square test for independent samples was used to test the null hypothesis. The results of this analysis are reported in Table 5. The analysis showed there were no violations of the assumptions of chi square. As shown in Table 5 there was a significant difference between the type of degree and SDA employment, $X^2(3, N = 114) = 13.409$, $p = .004$. The strength of the relationship, as measured by Phi, was .34. There is a strong relationship between the location of graduates and the degree the graduates earn. More than half of the graduates in the Technical, Business, and Health degree categories live and work inside the SDA. The null hypothesis was rejected.

Table 5

Cross tabulated Table for Type of Degree and SDA Employment

	Technical		Business		Health		Other	
SDA Employment	n	%	n	%	n	%	n	%
Inside	17	85.0	32	80.0	21	52.5	6	42.9
Outside	3	15.0	8	20.0	19	47.5	8	57.1
Total	20	100.0	40	100.0	40	100.0	14	100.0

$N = 114$

When observing the data on graduates who work within the SDA and the degrees held by those graduates, it is significant to note that 85% of the Technical graduates, 80% of the Business graduates, and 52.5% of the health graduates work inside the SDA. Conversely, 42.9% of the other graduates work within the SDA.

Analysis of Salary Range and Degree Earned

Null Hypothesis 4: There is no significant relationship between the salary range and the type of A.A.S. degree graduates earned.

This analysis was designed to determine the relationship, if any, between the salary range of graduates and the type of degree the graduates earned. The analysis was limited to those graduates who indicated on the survey that they were currently employed. A Kruskal-Wallis H test was used to analyze the data. The results of the analysis are reported in Table 6. Based on the analysis, there was a significant relationship between the type of degree and the salary earned, $H(3, N = 114) = 34.904, p = .001$. Some graduates clearly have higher salaries based on the degree earned. Health degree graduates and Technical degree graduates have a higher salary range than Business and Other graduates. The null hypothesis was rejected.

Table 6

Degree Type and Salary Range Mean Rank

Degree Type	<u>N</u>	Mean Rank
Technical	20	71.63
Business	40	36.89
Health	40	75.88
Other	14	43.71
Total	114	

The Kruskal-Wallis H test was used to determine if there were differences in the mean ranks among the four degree types. A salary range mean rank aggregated by degree types was determined by first gathering data from graduates' response to survey question 5 regarding salary ranges. Respondents were asked to choose one of 18 salary ranges. Using the Kruskal-Wallis H , each graduate who responded was ranked from smallest salary range to largest salary range based on his or her response. Once this rank was established a mean rank for these graduates, based on their residence location, was determined. This mean salary rank does not tell the average salary for the group, but it does indicate whether one group has a higher mean salary than the other group. A higher mean salary rank means that graduates in one degree category earned more money than graduates in another degree category. The greater the difference between the four mean salary ranks means a greater difference in salary between the four groups. Based on the data, Health graduates have the highest salary with a mean rank of 75.88, followed by Technical at 71.63, then Other at 43.71, and finally Business at 36.89.

It is interesting to note that the salary range with the most number of graduates is the \$35,001 to \$40,000 category with 23.8% of the total graduates reporting a salary in this range. The results of the comparison of the salary range to degree type is reported in Table 7.

Table 7

Salary Range and Degree Type

Salary Range	Technical		Business		Health		Other		Total	
	%	Freq	%	Freq	%	Freq	%	Freq	%	Freq
1 Up to \$20,000	10.0	2	22.5	9	0	0	42.9	6	14.9	17
2 \$20,001 to \$25,000	15.0	3	32.5	13	0	0	0	0	14.0	16
3 \$25,001 to \$30,000	5.00	1	22.5	9	15.0	6	7.1	1	14.9	17
4 \$30,001 to \$35,000	0	0	2.5	1	2.5	1	14.3	2	3.5	4
5 \$35,001 to \$40,000	15.0	3	12.5	5	45.0	18	14.3	2	24.6	28
6 \$40,001 to \$45,000	15.0	3	5.0	2	10.0	4	14.3	2	9.6	11
7 \$45,001 to \$50,000	15.0	3	0	0	12.5	5	7.1	1	7.9	9

Table 7 Continued

8 \$50,001 to \$55,000	20.0	4	0	0	5.0	2	0	0	5.2	6
9 \$55,001 to \$60,000	0	0	0	0	2.5	1	0	0	.9	1
11 \$65,001 to \$70,000	5.0	1	0	0	2.5	1	0	0	1.8	2
13 \$75,001 to \$80,000	0	0	0	0	2.5	1	0	0	.9	1
17 \$95,001 to \$99,999	0	0	0	0	2.5	1	0	0	.9	1
18 \$100,000 or Higher	0	0	2.5	1	0	0	0	0	.9	1
Total	100	20	100	40	100	40	100	14	100	114

Analysis of Degree Earned and Employment Category

Null Hypothesis 5: There is no significant relationship between the type of A.A.S. degree a graduate earned and the category of job in which the graduate is currently employed.

This analysis was designed to determine the relationship, if any, between the type of degree that a graduate earned and the type of job the graduate is involved in based on employment categories.

In order to compile the data so that chi square could be used for analysis the 10 employment survey responses were combined to make four employment categories, Industrial, Business, Health, and Other. This means that each employment category may represent more than one type of business or industry job listing. The 10 survey responses on employment were combined into four employment categories as follows: Industrial – manufacturing; Business – retail, food service/restaurant, clerical; Health – health care; Other – law enforcement or public safety, agriculture, education, and government. Any written responses to the survey were applied to the appropriate employment category. When all four employment and degree categories were analyzed, it was discovered that an assumption of chi square was violated. Because of this, the Other category for both the degree type and employment category was dropped from the analysis.

A chi square analysis for independent samples was used to analyze the data. The results of this analysis are reported in Table 8. There is a significant relationship between the type of degree a graduate earned and the type of employment, $X^2(4, N = 87) = 87.464, p = .001$. The strength of the relationship as measured by Phi is .71, indicating a strong relationship between type of degree and employment category. The results of the analysis indicate that most graduates find employment in an area related to their degree. All Health graduates are employed in the health field and most Technical graduates are employed in the Industrial employment category. The null hypothesis was rejected.

Table 8

Degree Type and Employment Category

Employment Category	Technical		Business		Health	
	n	%	n	%	n	%
Industrial	15	78.9	8	25.8	0	0.0
Business	3	15.8	18	58.1	0	0.0
Health	1	5.3	5	16.1	37	100.0
Total*	19	100.0	31	100.0	37	100.0

*N=87

Based on the analysis, graduates in the three degree categories were finding employment in fields for which they trained. The percentage of graduates who found employment in an area related to their degree varied. For example: 100% of the Health graduates found employment in the Health field, 78.9% of the Technical graduates found employment in the Industrial field, and 58.1% of the Business graduates found employment in the Business field. In addition to finding employment in a related field, many graduates were able to find employment in other categories of employment. For example, 25.8% of Business graduates found employment in the Industrial field while 16.1% found employment in the Health field. In addition 15.8% of the graduates with a Technical degree found employment in the Business field while 5.3% of graduates with a Technical degree found employment in the Health field. It is interesting to note that no Health graduates found employment in the Business or Industrial field.

Analysis of Salary and Employment Location

Hypothesis 6: There is no significant relationship between the salary and the employment location of graduates.

This analysis was designed to evaluate the relationship between the salary range of A.A.S. graduates and the geographic location of graduate's employment. The salary range variable was compared with the employment location variable using a Mann-Whitney U test and a mean salary rank was established. The mean salary rank is an average of the responses to the survey question on graduate's salary range aggregated by graduates' residence location. A higher mean salary rank would indicate that graduates in that residence location earned more than graduates in another residence location who had a lower mean salary rank. The mean salary rank of graduates employed inside the SDA was 51.64 which was lower than the mean salary rank, 69.21 of graduates who were employed outside the SDA. Results for this analysis are reported in Table 9. Because the number in each group analyzed using the Mann-Whitney U was larger than 20, the results generated a two-tailed Z test. $Z = 2.710$ ($N = 114$), $p = .007$. There is a significant difference in the salaries of graduates who were employed inside the SDA and graduates employed outside the SDA. Graduates employed outside of the SDA had higher salaries than those employed inside the SDA. The null hypothesis was rejected.

Table 9

Residence Location and Salary Range Mean Rank

SDA Employment	<u>N</u>	Mean Rank	Sum of Ranks
Inside	76	51.64	3925.0
Outside	38	69.21	2630.0
Total	114		

Analysis of Degree Earned and Advanced Degree Persistence

Null Hypothesis 7: There is no significant relationship between the type of A.A.S. degree earned and the graduates' persistence toward an advanced degree.

This analysis was designed to determine the relationship, if any, between the type of A.A.S. degree and the graduate's persistence toward an advanced degree.

A 4 by 2 cross-tabulated table and the chi square test for independent samples was used to analyze the data. The data are reported in Table 10. The analysis showed that there is a significant relationship between the type of degree a graduate earns and the graduate's persistence towards an advanced degree $X^2 (3, \underline{N} = 124) = 9.662, p = .022$. The strength of the relationship as measured by Phi was .279. The analysis indicates that, based on the degree earned, some graduates are more likely than others to work toward an advanced degree. The degree category Other graduates are the most likely to work toward an advanced degree, followed by Technical, Health, and finally Business. The null hypothesis was rejected.

Table 10

Degree Type and Advanced Degree Persistence

	Technical		Business		Health		Other		Total	
	n	%	n	%	n	%	n	%	n	%
Working on/Earned Degree	9	45.0	7	17.1	13	29.5	10	52.6	39	31.5
Not Working on Degree	11	55.0	34	82.9	31	70.5	9	47.4	85	68.5
Total	20	100.0	41	100.0	44	100.0	19	100.0	124	100.0

Based on the responses of 124 graduates, the group with the smallest number of graduates pursuing an advanced degree was the Business graduates. In this group, 17.1% of Business degree graduates were working on/earned an advanced degree. For the Technical graduates, 45% of the respondents indicated they were working on/earned an advanced degree. In the Health area, 13 graduates or 29.5% of the respondents indicated that they were working on/earned an advanced degree. In the Other category, there were 10 individuals who indicated they were working on/earned an advanced degree. This number represented 52.6% of the respondents in this category.

Analysis of Student Perception of Degree's Impact

The final question on the mailed survey asked the question: what impact do you think your A.A.S. degree from Walters State has had on your career? Of the 125 surveys returned, 111 respondents completed this question. To analyze the data, the open-ended responses were labeled as positive, negative, or neutral. A positive response indicated

that earning an A.A.S. degree had allowed graduates to achieve career advancement, pay increases, or opened up new career fields. A negative response indicated that the A.A.S. degree had been a detriment to the graduate's career. A neutral response indicated that the graduate reported no or minimal career advancement, no new career field attainment, and/or minimal pay increases as a result of the A.A.S. degree. An analysis of the data indicated that 80% of the respondents gave a positive response to the question, indicating that they had received at least some gain from the A.A.S. earned at Walters State. There were no negative responses to the question. The remaining 20% of the responses were considered neutral, indicating the degree earned had no impact on the graduate's career.

The following are representative examples of positive statements made by graduates in response to the survey question on the impact of the A.A.S. on their career:

- It has had a great impact. I have my A.A.S. degree in Drafting and Design from Walters State and that helped me when I was job hunting.
- Besides an increase in yearly income, my degree has helped me move from a no end job to a position where I am of service to others who are trying to better themselves.
- Plenty. It not only has broadened my earning power, my nursing degree has also been great with learning knowledge and people skills. God has really blessed me. Thank God for the W.S.C.C. program.
- I went from making \$12,000 a year before my A.A.S. degree to \$35,000. I am very pleased with my career choice.
- Walters state has opened me to a world of knowledge. The instructors that I had were super and encouraging. I love to learn and I also want to eventually

teach. However, currently in my career the associate degree has helped me with the basics of my job and in getting me where I am today. The associate for me has been the building blocks of my career in education.

- A great impact. I was promoted 6 months after obtaining my degree. The degree has helped motivate me to pursue a 4-year degree (BS). My graduation date has been set for December 05. Thanks, Walters State!

The following are representative samples of neutral statements made by graduates in response to the survey question on the impact of the A.A.S. on their career:

- I am glad I have the degree but it made no impact on decisions when promotions came up. I have been passed over for younger girls with no experience for secretarial jobs. It's sad because the employer (State of Tennessee) was the payer for my education and they don't take advantage of their investment. Advanced education is useless when you are a State employee.
- My degree was in early childhood, it gave me a pay increase, but did nothing to change my position advancement. I'm not even working in early childhood currently, but at high school level.
- I work in a plant so it really has not had an impact on it at all.

CHAPTER 5

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

Summary

Community colleges in the state of Tennessee are supported by tax dollars collected from the citizens and businesses of the state. In order to prove that the college is giving a fair return to the taxpayers, it is important to demonstrate that the college has a positive impact on the area it serves. One way to indicate that the college is performing well is to analyze specific degree programs offered by the college and see how these degrees meet the needs of the community. If a college can show that programs are valuable to the community, then the college provided a fair return to the community for the tax dollars that are spent to support the college.

It is important for colleges that offer the A.A.S. degree to be able to articulate to their constituency the distinction between graduates who earn the A.A.S. degree from one of the other associate's degrees. The A.A.S. degree with its emphasis on program-area, specific courses is an excellent degree for preparing a local workforce. Originally intended as a terminal degree, students frequently earn the A.A.S. degree and then proceed to earn a four-year degree. Though there is a fair amount of research on the community college associates degrees, there is little research that distinguishes between the A.A., A.S., and the A.A.S. degrees.

This study was conducted using a survey of students who earned an A.A.S. degree from Walters State Community College in the school year 1999-2000. The goal of the survey was to quantify the impact that earning an A.A.S. degree has on the service delivery area of the college. This group was studied because the graduates would have

had time to make some life and career decisions and so would be better suited to answer the survey than graduates who have completed college in later years. Due to the absence of data from comparable studies, there was no reason to attempt a comparative study with other data. Therefore, for each hypothesis, conclusions are drawn only for the population studied.

Residence of Graduates

A one-sample chi square was used to compare the number of graduates who live inside the SDA and the number of graduates who live outside the SDA. Based on the analysis, it was determined that the majority of the graduates reside inside the SDA. This is a significant finding, as it indicates that a significant number, 73.6%, of A.A.S graduates do continue to reside in the area near the college 5 years after graduation. A graduate who lives near the college is going to have more of an impact on the college's SDA than a student who lives away from the college. A graduate who lives inside the SDA is more likely to buy products, pay taxes, and participate in community activities than the graduate who lives outside the area.

Residence Location and Employment Location

A chi square for independent samples was used to compare the residence location of graduates and their working locations. If a significant number of graduates work inside the SDA and live inside the SDA, then it is further evidence that A.A.S. graduates have a positive impact on the SDA. It was determined that a significant number, 89.4%, of graduates both work inside the SDA and live inside the SDA. Working for a local

company means that the graduates are working in a support capacity to provide jobs for other workers in the company who may or may not be Walters State Community College A.A.S. graduates. In addition, working for a local company means that the company impacts the community by providing payroll, paying taxes, buying from other local firms, and supporting local charitable organizations.

Employment Location and Degree Earned

A 4 by 2 crosstabulated table and the chi square test for independent samples was used to compare 4 degree types to the residence location of graduates. In the two previous hypotheses, it was determined that the majority of graduates live in the SDA and also work in the SDA. Hypothesis 3 is used to determine if employment inside or outside the SDA is determined by the degree earned. Do graduates with some degrees tend to stay in the SDA more than graduates with other degrees? In order to make the data more manageable, degrees earned by graduates were combined into four categories. These categories are: Technical, Business, Health, and Other. When the analysis was performed, it was evident that not all of the degree categories had a majority of graduates employed inside the SDA. For example, 42.9% of the Other graduates work inside the SDA. In the Technical category, 85% of the graduates work inside the SDA. In the Business category, 80% of the graduates work inside the SDA. In the Health category, 52.5% of the graduates work inside the SDA. One conclusion that can be drawn from these data is that graduates of all degrees find some employment in the area and are having a positive impact on the SDA. It could also be concluded that local business and industry needs are better served by the Technical and Business graduates, as more than half of each of these

graduates find employment within the SDA. It is also possible to rank the impact on the SDA from most positive to least positive for each of the degrees listed. Based solely on the percentage of graduates employed in the SDA, Technical would have the most positive impact, Business would have the second most positive impact, Health would have the third most positive impact, and Other would have the least positive impact.

Salary Range and Degree Earned

The Kruskal-Wallis H test was used to determine if there was a difference in the salary mean ranks for the four degree types: Technical, Business, Health, and Other. The Kruskal-Wallis H test ranked all the salaries and then ran a comparison of salary categories to degree types. A higher mean rank would indicate the degree category earned a higher salary. Based on the data, it is apparent that some graduates earn significantly more than other graduates. The degree type with the highest salary category was the Health degree with a mean rank of 75.88. This would indicate that graduates with a health degree made the highest salary of the four categories. The degree type with the second highest mean salary rank was Technical with a mean rank of 71.63. The degree type with the third highest salary rank was Other with a mean rank of 43.71. The degree type with the lowest salary rank was Business with a mean rank of 36.89. All degree categories reported some salary; therefore, all degree categories had a positive impact on the SDA. It could also be argued that the Health and Technical degree categories, with higher mean ranks, had a more positive impact on the SDA than the Other and Business degree categories.

Degree Earned and Employment Category

A chi square analysis for independent samples was used to determine if there was any relationship between the degree a graduate earned and the current occupation of the graduate. This analysis was used to determine whether a person who earned a degree in a certain degree category found employment in a related employment category. A comparison of the three degree categories Technical, Business, and Health were made to the three employment categories: Industrial, Business, and Health. The results of this analysis yielded a percentage of graduates in each degree who found employment in each category. A significant number of Technical graduates, 78.9%, found employment in Industrial jobs. A fewer number, 15.8%, of Technical graduates found employment in the Business employment category, while 5.3% of Technical graduates found employment in the Health field. For Business graduates, the spread among the employment categories was the most pronounced with 58.1% finding employment in the Business employment category, 25.8% finding employment in the Industrial category, and 16.1% finding employment in the Health category. For Health graduates, the spread among the job categories was non-existent. All Health graduates found employment in the Health employment category. Such successful employment is indicative of a strong impact on the SDA, especially when taken into consideration with other hypotheses in this study that indicate the majority of graduates live and work in the SDA. It is interesting to note that the degree categories of Business and Technical produced graduates that were accepted in several degree type categories. This may not indicate a weakness in the degree programs but may highlight the adaptability of the graduates to different employment situations.

Salary and Employment Location

A Mann-Whitney U test was used to determine if there was a significant relationship between the salary range mean rank and employment location of graduates. A salary range mean rank aggregated by residence location was determined by first gathering data from graduates' responses to survey question 5 regarding salary ranges. Respondents were asked to choose one of 18 salary ranges. Graduates who responded were ranked from smallest salary range to largest salary range based on their responses. Once this was established, the Mann-Whitney U test was used to determine a mean rank of these graduates based on their residence location. The mean salary rank does not tell the average salary for the group, but it does indicate whether one group has a higher mean salary than the other group. A higher mean salary rank means that graduates in that residence location earned more money than graduates in the other residence location. The greater the difference between the two mean salary ranks means a greater difference in salary between the two groups. The mean salary rank of the graduates employed inside the SDA was 51.64. The mean salary rank of graduates employed outside the SDA was 69.21. This indicates that those graduates working outside the SDA were earning a significantly higher salary than those graduates working inside the SDA. Though there were more graduates, 76, living inside the SDA as compared to the 38 graduates living outside the SDA it is apparent that graduates are able to earn more money by working outside the SDA. Graduates who leave the area and make more money may not be having as positive an impact on the SDA as those graduates who live and work inside the SDA. However, the impact may not be as negative as it first appears, as some of the graduates who work outside the SDA continue to live inside the SDA.

Degree Earned and Advanced Degree Persistence

A 4 by 2 crosstabulated table and the chi square test for independent samples was used to determine the relationship between the type of degree a graduate earned and the graduates' persistence toward an advanced degree. The four degree categories were Technical, Business, Health, and Other. For this analysis, the graduates from the four degree categories were determined to be either not working toward an advanced degree or had earned /were working toward an advanced degree. When looking at the overall group of graduates, it is clear that the majority of the graduates, 68.5%, are not pursuing an advanced degree. When examined by degree category, the graduates least likely to pursue an advanced degree are those in Business with 17.1% of the graduates working toward an advanced degree. Other graduates are the most likely to work toward an advanced degree with 52.6%, followed by Technical graduates at 45.0% and Health graduates at 29.5%. People who earn advanced degrees tend to earn more money (Carnevale, 2000). If a person is earning more money, then the impact of this person on economy of the SDA is increased. Though this study does explore the number of graduates who are working on or earned an advanced degree, it does not address how many graduates finished a degree, or the advanced degree these graduates earned.

Student Perception of Degree's Impact

Students who responded to question 8 on the survey were asked to write their response to the question: What impact do you think your A.A.S. degree from Walters State has had on your career? An overwhelming majority (80%) of the respondents indicated they thought the A.A.S. they earned had been a positive influence on their

career. Only 20% of the respondents indicated a neutral response on the question and no negative responses were returned.

Conclusions

Based on the results of data from this study, it is apparent that the A.A.S. degrees earned at Walters State Community College have a positive impact on the SDA. An overwhelming majority of graduates choose to live and work in the SDA, and most of these graduates find employment related to their degree. Many A.A.S. graduates pursue an advanced degree, even though the A.A.S. degree is not designed as a transfer degree. Student perceptions of the impact of earning an A.A.S. degree on their career were overwhelmingly positive. Most students who responded indicated that they were very pleased with the impact of the A.A.S. on their career or educational goals, and in some cases the impact of earning the A.A.S. was life-changing. It is interesting to note that only 8% of graduates who live inside the SDA leave the SDA for employment and that no graduates who reside outside of the SDA travel to the SDA for employment. If there were a significant number of graduates living inside the SDA and working outside the SDA, then the impact on the community would be much less positive than what was found to be true. The one area that may be construed as a negative impact on the SDA is in the area of salaries outside the SDA. Based on the results of this study, graduates who work outside of the SDA earn higher salaries. It is difficult to know whether graduates leave the area to earn higher salaries or whether they leave for some other reason, to follow a spouse for example, and so, earn a higher salary in a location that simply has a higher cost of living and correspondingly higher salaries. It is interesting to note that nine

graduates live in the geographic area and travel to a work location outside of the SDA. Further study of this group might reveal a disparity between local salaries and salaries in the surrounding regions.

It is apparent from this study that certain degrees appear to have more of an impact on the SDA than other degrees. With the majority of graduates in Health and Technical finding work in their area of study, choosing to work in the SDA, and having the highest mean rank salary range, it could be surmised that graduates in these 2 degree categories have the highest positive impact on the SDA.

Recommendations

For Practice

Walters State Community College has always prided itself on its strong connection to the community. Part of this connection includes providing an education that is valued by the employers in the SDA. To ensure that all A.A.S. degrees offered at Walters State Community College are relevant, the college uses advisory boards in the curriculum-planning process. The individuals who serve on these advisory boards are frequently affiliated with the local industries who hire the Walters State Community College graduates. It is because of this strong advisory board affiliation that the A.A.S. degrees have such a positive impact on the SDA. In addition, most of the advisory boards have representatives from four-year institutions that accept A.A.S. graduates as transfer students. It is not unusual then, that Walters State Community College is so successful at placing these A.A.S. graduates in four-year colleges and universities. It may be wise for the Walters State Community College to have even more contact with universities, local

employers, and alumni beyond the level of advisory boards to continue to improve its impact on the community.

For Future Research

This study has examined the impact of the A.A.S. degree on the region served by Walters State Community College in some detail. However, there are areas where more information could be derived that would tell the college, in even more detail, how well the graduates are performing and could help improve the performance of the graduates, thus making even more of an impact on the SDA.

The study looked at only the SDA and measured success based on what occurred in the SDA. It would be interesting to find out if the areas contiguous to the SDA are deriving benefit from Walters State Community College programs. With two large metropolitan areas, Knoxville, Tennessee, to the south and the Tri-Cities, Tennessee, region to the north, are programs supplying a significant number of graduates to these areas? Some programs, nursing for example, are almost certainly sending graduates into the neighboring counties for employment, and it would be informative to find out where graduates are employed by degree major.

To help further judge the impact on the SDA, it would be beneficial to know where graduates were living while they were attending Walters State. Did a significant number of graduates come to the college to attend the programs offered because the college's unique programs were a draw for students who live out of the SDA? Knowing if this were true could greatly benefit the college by helping to direct marketing of some programs to areas beyond the SDA.

It would be beneficial to the college to find out if some areas of employment are underserved by the college, as well as finding out if the college produces too many graduates for some areas of employment. Creating more job categories on the survey would be one way of finding out which areas of employment in the SDA have too many graduates. This information could help the college adjust the curriculum and program offerings to better serve the SDA.

A follow-up study of graduates who indicate they are working on an advanced degree, or have earned an advanced degree, could help direct future curriculum changes to specific A.A.S. degree programs. This could benefit A.A.S. graduates who choose to pursue an advanced degree by providing more general education content in the degrees earned by these graduates.

The portion of the survey that asked for the opinion of graduates on how earning an A.A.S. degree had impacted their careers could be expanded to help determine why some students feel the degree had less value than other students. While only 20% of the students who responded indicated a neutral response, it could be helpful to find out why these students were not as positive as the remainder of the respondents to the survey.

It would be most helpful to the community and to graduates to continue this study over the next several years to gauge the continued impact on the region. The Walters State Community College graduates would benefit greatly from knowing if their degree is valued by local employers and is likely to help them find employment in the area of the state where they choose to live. This more in-depth study of A.A.S. degrees could also pay dividends when money is sought, either from grants or state funds, to expand the programming associated with these degrees. The citizens of the region served by the

Walters State Community College will all benefit from degree programs proven to have a positive impact on the area.

It would also be very interesting to know how the A.A.S. degree is impacting other regions in the state and the nation. I would like the opportunity to gather data from community colleges across the United States to see if similar results are obtained from other regions of the country. If these data were gathered and reported, it might help students decide to choose a degree that would allow them to stay near their homes and still earn a decent wage. Such data could also be used to support proposals for grant funds to develop new A.A.S. degrees or to promote existing successful degrees.

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APPENDIX

STUDENT SURVEY

Student Survey

Please respond to the following questions. Questions on employment deal with primary employment. When completed, follow the directions at the bottom of the page to return the survey.

1. In which county do you currently live? (check one)

- | | | |
|----------------------------------|------------------------------------|-------------------------------------|
| <input type="checkbox"/> Hawkins | <input type="checkbox"/> Sevier | <input type="checkbox"/> Unicoi |
| <input type="checkbox"/> Hancock | <input type="checkbox"/> Grainger | <input type="checkbox"/> Sullivan |
| <input type="checkbox"/> Hamblen | <input type="checkbox"/> Jefferson | <input type="checkbox"/> Washington |
| <input type="checkbox"/> Greene | <input type="checkbox"/> Claiborne | <input type="checkbox"/> Knox |
| <input type="checkbox"/> Cocke | <input type="checkbox"/> Johnson | <input type="checkbox"/> Blount |
| <input type="checkbox"/> Union | <input type="checkbox"/> Carter | |

Other _____

(If Other, please indicate city, state and county)

2. Are you currently employed?

- Yes (go to question #4 answer the rest of the questions based on current employment)
 No (go to question #3)

3. If you are currently unemployed; have you been employed since graduation?

- Yes (please answer all of the following questions based on most recent employment)
 No (please skip to question #7)

4. In which county are you employed?

- | | | |
|----------------------------------|------------------------------------|-------------------------------------|
| <input type="checkbox"/> Hawkins | <input type="checkbox"/> Sevier | <input type="checkbox"/> Unicoi |
| <input type="checkbox"/> Hancock | <input type="checkbox"/> Grainger | <input type="checkbox"/> Sullivan |
| <input type="checkbox"/> Hamblen | <input type="checkbox"/> Jefferson | <input type="checkbox"/> Washington |
| <input type="checkbox"/> Greene | <input type="checkbox"/> Claiborne | <input type="checkbox"/> Knox |
| <input type="checkbox"/> Cocke | <input type="checkbox"/> Johnson | <input type="checkbox"/> Blount |
| <input type="checkbox"/> Union | <input type="checkbox"/> Carter | |

Other _____

(If Other, please indicate city, state and county)

5. Your currently salary range is? (Please check one indicating the range)

- | | | |
|--|---|---|
| <input type="checkbox"/> Up to \$20,000 | <input type="checkbox"/> \$ 55,001 to \$60,000 | <input type="checkbox"/> \$ 95,001 to \$ 99,999 |
| <input type="checkbox"/> \$20,001 to \$25,000 | <input type="checkbox"/> \$ 60,001 to \$65,000 | <input type="checkbox"/> \$100,000 or higher |
| <input type="checkbox"/> \$25,001 to \$30,000 | <input type="checkbox"/> \$ 65,001 to \$70,000 | |
| <input type="checkbox"/> \$30,001 to \$35,000 | <input type="checkbox"/> \$ 70,001 to \$75,000 | |
| <input type="checkbox"/> \$35,001 to \$40,000 | <input type="checkbox"/> \$ 75,001 to \$80,000 | |
| <input type="checkbox"/> \$ 40,001 to \$45,000 | <input type="checkbox"/> \$ 80,001 to \$85,000 | |
| <input type="checkbox"/> \$ 45,001 to \$50,000 | <input type="checkbox"/> \$ 85,001 to \$ 90,000 | |
| <input type="checkbox"/> \$ 50,001 to \$55,000 | <input type="checkbox"/> \$ 90,001 to \$ 95,000 | |

6. In what type of business or industry are you employed?

- Manufacturing
- Retail
- Food service/restaurant
- Health Care
- Law enforcement or public safety
- Agriculture
- Education
- Clerical
- Government, not law enforcement
- Other (list) _____

7. Which statement best explains your efforts toward earning a Bachelor of Arts, a Bachelor of Science degree, or a higher degree since graduating? (You may check more than one)

- I have earned an advanced degree.
- I am currently working on an advanced degree.
- I am not currently working on an advanced degree.
- I have not done any work toward an advanced degree.

8. What impact do you think your A.A.S. degree from Walters State has had on your career?

VITA

MICHAEL STEPHEN HELMICK

Personal Data: Date of Birth: February 6, 1952
Place of Birth: Columbia, South Carolina
Marital Status: Married
Children: 3

Education:

University of South Florida, Tampa, Florida
A.A. 1972

University of West Florida, Pensacola, Florida
Industrial Arts, B.S., 1974

East Tennessee State University, Johnson City, Tennessee;
Technology, M.S., 1998

East Tennessee State University, Johnson City, Tennessee;
Educational Leadership, Ed.D., 2005

Professional
Experience:

Industrial Arts Instructor, Westview Junior High School,
Miami, Florida 1974-1975

Principal/Teacher Grades 4-8, Trade Elementary School,
Trade, TN, 1975-1978

Drafting Instructor, Tennessee High School,
Bristol, TN, 1978-1979

Drafter, Tennessee Eastman Chemical Company,
Kingsport, TN, 1979-1981

Owner, J and M Service Center,
Kingsport, TN 1981-1992

Technology Instructor, Abingdon High School
Abingdon, VA, 1992-1996

Tech Prep Coordinator, Northeast State Technical Community
College, Blountville, TN, 1996-2000

Director for Business and Industry Training, Northeast State

Technical Community College, Blountville, TN, 1998-2000
Dean of Technical Education, Walters State Community
College; Morristown, Tennessee, 2000-2005

Honors and

Awards:

Outstanding Leadership Award, Walters
State Community College

Trailblazer Award, Tennessee Board of Regents On-Line
Degree Program