An Institutional Study of the Relationships between Displaced Workers' Attributes and the Level of Program Completion in a Technical College

A Dissertation submitted
to the Graduate School
Valdosta State University

in partial fulfillment of requirements
for the degree of

DOCTOR OF EDUCATION

in Adult and Career Education

in the Department of Adult and Career Education
of the Dewar College of Education and Human Services

May 2015

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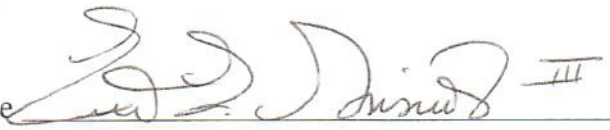
Signature 

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ABSTRACT

The objective of this research study was to determine if attributes of displaced workers such as education, income, and work status and experience influenced their level of program completion at a technical college. The Great American Recession of 2007-2009 produced 6.9 million displaced workers from long-term jobs (Greenstone & Looney, 2011), and provoked many displaced workers to enroll into post-secondary education institutions seeking to acquire new skills or refine their current skills, in order to expedite their return to the workforce. This study was designed to reveal the possible influence that displaced workers' attributes may have had on their level of program completion. Findings from the study may assist technical colleges in their endeavors to develop and implement effective practices and strategies that would best serve the displaced worker population. Archival data gathered for the study was collected from Albany Technical College's Admission and Financial Aid offices, and a survey instrument was created for this research purpose.

Descriptive and inferential statistics were used to analyze the archival data and responses from the closed-ended survey questionnaire. The study's population consisted of 421 displaced workers, who were students at Albany Technical College during the Fall 2009 through Summer 2014 academic terms. There were 163 participants selected from the archival group to participate in the survey phase of the study, in which 82 (50%) of the participants provided responses to the survey questionnaire. Frequency and percentage were reported for archival and survey data, and Independent *t* test and ANOVA analysis were used to examine the relationship between displaced workers' attributes and their level of program completion.

The findings of this study revealed that attributes such as prior income level, prior education level and work experience were unlikely to influence the displaced worker's level of program completion. However, findings did suggest that those displaced workers who had an income level of less than $10,000 or within the $31,000 to $50,000 range and poor quantitative literacy level, had a relationship with program completion level. Additionally, findings suggested that those individuals with some college and those with a high school diploma upon entrance into college were more likely to complete a program of study at a higher level than those with a general education diploma (GED), or those individuals with the work status of full-time or full-time/part-time employment were more likely to complete a program of study at a higher level than those who were unemployed.

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ACKNOWLEDGEMENTS

To have accomplished a task such as a dissertation would have been impossible without GOD's favor on my life and the love and support from my family, friends, co-workers, colleagues, professors, and dissertation committee members. Therefore, let me first thank the Almighty GOD for allowing such wonderful people to enter into my life and giving me the ability and fortitude to endure such a daunting task. I will forever be grateful for HIS love and presence in my life.

I would like to express sincere appreciation to my dissertation committee chairperson, Dr. Reynaldo Martinez, and committee members, Dr. James Archibald, Dr. Iris Ellis, and Dr. Larry Hilgert, for the guidance and leadership they provided me on this journey. Thank you for your excellent display of scholarship and professionalism. In addition to my dissertation committee, I would like to thank the faculty and staff of the Adult and Career Education (ACED) department for equipping me with the knowledge and support needed for this educational journey. The coursework and the research study I conducted were both relevant to my job duties, and this process has allowed me to improve on my planning and decision making for the division under my supervision.

My dissertation journey would have been extremely difficult to complete without the support of the senior administration staff at Albany Technical College, my colleagues, peers, current and past supervisors, faculty, staff, students and friends. The support I received from Dr. Anthony Parker, President at Albany Technical College; Mr. Joe Dan Banker, Executive Director for Academic Affairs at TCSG; Dr. Shirley Armstrong, Vice President for Academic Affairs at Albany Technical College; Dr. Dorothy Garner (retired Dean of Academic Affairs at Albany Technical College); Mr. Kenneth Wilson, Financial Aid Director at Albany Technical College; and Mr. Calvin Lee, Student Navigator at Albany Technical College were remarkable and essential to my research study and professional and personal growth. Additionally, I would like to thank my former supervisor with the Georgia Department of Correction; Mr. Jack Perryman (retired Deputy Warden of Care & Treatment). Thank you, Jack, for your initial suggestion several years ago for me to take this journey. I will always cherish our friendship and the continuous support you have displayed for my family and me over the years.

Finally, to my beautiful, devoted and loving family: wife, Maqueta, and children, Allison and Jayson: thank you for being my foundation and everlasting joy in life. The love and support you have displayed during this process has been amazing, and my accomplishments are the fruits of your love and support. In addition to my immediate family, I would like thank my parents, Emmett and Josephine Griswold; sister and brother-in-law, Patricia and Keith Wiggins; and mother-in-law and father-in-law, Gloria and Jesse Peters for their emotional and financial support during this period in my life. All of you are my gifts from GOD, and I thank you for your support and encouragement throughout this process and throughout life in general.

Chapter I

INTRODUCTION

At the age of 45, Yvonne was laid off from her sales job due to a corporate merger. The highest level of educational attainment for Yvonne, at the time of her lay off, was a high school diploma. After several unsuccessful attempts to return to the workforce and struggles to meet her financial obligations, Yvonne decided to change her career by enrolling full-time in Monroe Community College as a Communications major. Within one year of graduating with her Communications degree, Yvonne was working as a full-time keynote speaker and was a published author. Yvonne credits her career change success to her college education (Kane, 2014).

The global financial crisis of 2008 and the Great American Recession of 2007-2009 had a drastic affect on the American worker and the global economy. During the global financial crisis of 2008, one of every four occupational positions lost worldwide was lost in the United States (Peck, 2011), in which the Great American Recession of 2007-2009 delivered 6.9 million displaced workers from long-term jobs (Greenstone & Looney, 2011). America recorded one of the highest unemployment rates in its history during the month of October 2009 at 10% (USBLS, 2012b). Attention has gravitated toward the high unemployment of workers due to the influx of American workers being displaced from employment, and the skills and literacy

gap among the American workforce. The displacement of the American worker has had an adverse affect on America's economy, families and national economic outlook.

This chapter will include historical information in regards to worker displacement in America, skills and literacy gap of workers, background of Albany Technical College and its service delivery area, the theoretical framework that will guide the direction of the study, the problem of the study and purpose statement, the research questions, and the significance of the research. In addition, this chapter includes definitions of key terms to aid the reader in clarification of the study.

Worker Displacement

One of the main areas that suffered significant job loss during the Great American Recession era was the manufacturing industry. However, the shrinkage of American manufacturing jobs occurred all throughout the 2000-2010 decade. In fact, from 2000 to 2011, manufacturing in the United States lost 5.5 million jobs, mostly due to the effect of globalization (Atkinson, 2012). Majority of the jobs lost in manufacturing occurred during December 2007 through June 2009; wherein two million or 14.6 % of manufacturing jobs were lost (Goodman & Mance, 2011). There were four states in the United States that recorded the highest share of manufacturing job losses during 2000-2010: Michigan (-46.7%); North Carolina (-43.5%); Rhode Island (-42.4%); and Ohio (-39.5%) (Atkinson, 2012).

Cities and families across America have experienced the effects of companies downsizing, the outsourcing of jobs, and abolishment of routine shifts. For example, the city of Albany and Dougherty County, Georgia, located in the southwest region of the state, suffered the loss of three major manufacturing companies during the 2005-

2009 eras. The closing of these three plants resulted in the unemployment rate for the Albany/Dougherty County area soaring to 11.5% at the onset of 2010 and remaining at that level for most of the year (Fletcher, 2011). The first major company to leave the area was Bob's Candy. Bob's Candy closed its Albany plant in 2005 and moved its manufacturing operation to Mexico. The following year Merck Chemical Company decided to downsize their operation and close its Albany plant in 2006. Finally, the Cooper Tire Company announced in 2008 that they were downsizing their North American operation and would close the Albany plant in 2009. These three plant closures accounted for over 1,800 jobs lost in the region (Fletcher, 2011). The yearly economic impact of the Bob's and Merck closures resulted in almost $80 million in economic losses (USA Today, 2005); and the Cooper Tire closure, alone, resulted in approximately $160 million in economic losses for the region (Fletcher, 2011). Even though the unemployment rate in Albany, Georgia has demonstrated modest improvement since 2010, the unemployment rate for this region of the state remains high. For example, the Georgia Department of Labor (2014a) reported that the Albany Metropolitan Statistical Area (MSA), which consisted of Baker, Dougherty, Lee, Terrell, and Worth counties, had one of the highest unemployment rates (8.3%) in the state, for the month of September 2014. In fact, the unemployment rate for Albany's MSA was higher than the state of Georgia's unemployment rate (7.9%) and the national rate (5.9%), for the month of September 2014 (Georgia Department of Labor, 2014b).

The Albany plant closures, along with other plant closures across the country, accounted for more than 15 million workers being displaced from their jobs between

2007 and 2009 (Greenstone & Looney, 2011). In fact, the American worker continued to experience displacement from employment throughout the 2000- 2010 decade. According to the U.S. Bureau of Labor Statistics (USBLS, 2012a), 6.1 million people were displaced from jobs that they held for at least 3 years from January 2009 through December 2011. The U.S. Bureau of Labor Statistics (2013a) reported as of January 2013, there were 12.3 million people unemployed in the United States, in which 4.7 million or 38.1% have been unemployed for 27 weeks or longer.

Skills and Literacy Gap

Many American workers continued to face the challenge of finding gainful employment that was compatible with the skills they offered. The outcomes from the Great American Recession of 2007-2009 resulted in many displaced workers finding it difficult to re-enter the workforce, due to possessing an outdated or obsolete skill set that was incompatible with the demands of an evolving workforce (Greenstone & Looney, 2011). The lack of knowledgeable and skilled workers inhibited employers from hiring qualified workers, who could function effectively in an evolving and competitive workforce (Gatta, 2008). Many American jobs remained unfilled due to a large percentage of the American adult population lacking the appropriate level of literacy skills needed in the workforce. According to findings in a 2003 study conducted by the National Assessment of Adult Learning, roughly half the adult population in the United States lacked the literacy skills needed to accomplish economic stability and self-sufficiency (Gatta, 2008). In fact, the 2010 U.S. Census

Bureau (2012) reported that in Dougherty County, Georgia, roughly 20.7% of those individuals older than 25 years (58, 220) lacked a high school diploma.

The lack of skilled workers needed for specialized positions had an adverse effect on America's economic recovery. Manufacturing companies were reporting that they received plenty of applicants for vacant positions, but few, if any, had the relevant experience or skills needed to perform the work (Isidore, 2011). The U.S. Bureau of Labor Statistics (2013b) reported that nearly four million jobs in the United States went unfilled during the months of September to October 2013. In addition, the Georgetown University's Center on Education and the Workforce reported that the lack of workers with post-secondary education credentials in the United States would result in a five million worker deficit by 2020 (Carnevale, Smith, & Strohl, 2013).

In an effort to rectify the skilled worker shortage, United States of America, President Barack Obama, established a goal for the nation to produce an additional five million community college graduates by the year 2020 (Moltz, 2009). Therefore, community and technical colleges would serve as key components to America's economic recovery by assisting in the battle to overcome America's skilled worker shortage. In fact, the U.S. Bureau of Labor Statistics (2013b) reported that in 2010, approximately one-third of all occupations required some level of post-secondary education for an entry-level position. Furthermore, the U.S. Bureau of Labor Statistics (USBLS, 2013a) projected that from 2010 to 2020 occupations that originally required an associate's degree for an entry level position would experience growth by 18%, and occupations that required some post-secondary, but non-award, would experience growth by 16.9%. Attaining a post-secondary education and a

technical skill have evolved into essential attributes needed for displaced workers to re-enter the workforce.

Background of Albany Technical College and its Service Delivery Area (SDA)

The Technical College System of Georgia (TCSG) was charged with providing technical, academic, and adult education and training to the citizens and businesses of Georgia in order to supply Georgia with a well-educated workforce that would compete globally (TCSG, 2011a). Albany Technical College (ATC) was one of 24 technical college units in TCSG, which was established in 1961 as the Monroe Area Vocational-Technical School. Shortly thereafter, in 1972, the college became known as the Albany Area Vocational-Technical School. In 1988, the college's name changed again to the Albany Technical Institute, and 12 years later (2000), with the passage of House Bill 1187, the Georgia Legislature approved the changing of technical institutes' names to "College," provided that they offer associate degrees (ATC, 2014a).

Albany Technical College's main campus was located in Albany, GA. ATC had the responsibility of providing technical and adult education opportunities to the citizens, businesses and industries within a seven-county service delivery area (SDA): Baker, Calhoun, Clay, Dougherty, Lee, Randolph, and Terrell counties (ATC, 2014a). The College offered over 40 technical diplomas, over 25 Associate of Applied Science degrees, and over 70 technical certificate of credit programs within several occupational areas such as Health Care Technology, Construction, Metals, Transportation, Early Childhood Care and Education, Engineering Technology, Business, and Personal and Public Service. In addition to credit programs, the college

also offered General Education Diploma (GED) program through its Adult Education centers and continuing education opportunities (ATC, 2014a).

Albany Technical College had an extensive and rich history of providing academic, technical and adult education, and training to the citizens and businesses of southwest Georgia. The college was accredited by the Southern Association of Colleges and Schools Commission on Colleges (SACSCOC) to award Associate of Applied Science Degrees. Furthermore, the college was affiliated with various program-specific accrediting agencies such as the Commission on Dental Accreditation, Georgia Board of Examiners of Licensed Practical Nurses, Joint Review Committee on Education in Radiologic Technology, Committee on Allied Health Education, Accreditation of the America Medical Association, Accreditation Review Committee for Educational Programs in Surgical Technology, Georgia Medical Care Foundation, PrintED through the Graphic Arts Education and Research Foundation (GAERF), and Georgia State Board of Cosmetology (ATC, 2014a).

According to the college's 2012 annual report, 2,242 students were awarded a technical certificate of credit (TCC); 1,311 students were awarded a technical diploma; and 262 students were awarded an Associate of Applied Science (AAS) degree for fiscal year 2012. Out of the 2,242 graduates produced during this reporting period, 565 graduates found job placement in their field of study, and 314 graduates found job placement in a related field within 6 months of graduating. In addition, the report suggested that 40% of ATC's student population was over age 30 during that reporting period (ATC, 2014b).

The 2010 U.S. Census reported that ATC's seven-county service delivery area consisted of 173,227 in population (U.S. Census, 2014a). In addition to ATC's seven-county service delivery area, the college reported for the Academic Year (AY) 2013, that Mitchell and Worth counties were among the top five counties where students identified as their county of residence (KMS, 2014). Out of all of ATC's service delivery area, Mitchell and a segment of Worth counties constituted a portion of the 2nd Congressional District of Georgia which ranked first out of 14 congressional districts in Georgia in income level below the poverty line (28.3%) (biggestuscities.com, 2014). In addition to having a high poverty level, the 2nd Congressional District of Georgia had a low literacy level among its adult population. According to the U.S Census, there were over 90,000 individuals in the 2nd Congressional District of Georgia, who were 25 years of age and over that lacked a high school diploma or its equivalency (U.S. Census, 2014b). The high poverty and low literacy level among the constituents of ATC validated the importance of delivering technical and adult education opportunities to a region of the state that was lagging behind in educational attainment when compared to other districts of the state.

Theoretical Framework

The displacement of American workers was a real-world problem that was in need of practical solutions. Identifying attributes of displaced workers and determining how they may influence different levels of program completion was vital in assisting displaced workers with program completion and workforce re-entry. Therefore, the following two theoretical frames were used to guide the direction of

this research study: Pragmatic Worldview and Human Capital Theory. These theoretical approaches helped to interpret data and identify possible intervention strategies for contemporary problems, such as job displacement and technical program completion.

Pragmatic Worldview

Conducting this type of study required the use of various approaches for collecting and analyzing data rather than committing to only one approach. The pragmatic worldview was a suitable approach to guide this study because the primary focus was on the research problem instead of methods, and all available approaches are used to gather a better understanding of the problem (Creswell, 2009). One of the primary objectives for this research study was to identify the level of influence the displaced worker's attributes had on his or her level of program completion at a technical college.

Human Capital Theory

Education was suggested to be a form of general human capital that alerted a potential employer that an individual was capable of effectively performing a certain task and possessed desirable intangible traits (Gowan & Lepak, 2007). Human Capital Theory suggested that a person's decision to invest his or her time and financial resources in an effort to pursue a higher education credential mainly depended on the expected returns on their investment (Taniguchi & Kaufman, 2005). Becker (2012) suggested that education, training, and health care were principal investments in human capital because acquiring a higher level of education would raise individual earnings, improve a person's health or enhance his or her lifestyle and

decorum. Jacobs (2013) added that it was vital for individuals to embrace a life-long approach towards human capital development strategies in order for the nation to experience economic success.

The occupational background of adult students, entering or returning to post-secondary education after job displacement was considered an important human capital factor that might influence their educational outcome. Adult students with high-status occupational backgrounds had a tendency to possess an existing level of high skills; therefore, giving the adult student, who had been displaced from employment, an advantageous position in his or her quest of acquiring a post-secondary credential within a timely manner (Taniguchi & Kaufman, 2005). Gowan and Lepak (2007) added that displaced workers with a higher level of education tended to have greater success in their job search than those individuals with lower levels of acquired education. In general, individuals with supplementary education were more likely to return to the workforce than those individuals with limited or no education.

Problem of the Study

The Great American Recession of 2007-2009 delivered 6.9 million displaced workers from long-term jobs (Greenstone & Looney, 2011). Therefore, in order for workers to have a legitimate chance for workforce re-entry, education beyond high school would be required. According to the U.S. Bureau of Labor Statistics (2013a), at least one-third of all entry level positions in America would require some level of post-secondary education. The problem was that the American worker had been

displaced at alarming rates, with many workers lacking the technical skills and literacy level needed for a swift re-entry into the workforce.

Purpose of Study

The purpose of this study was to explore attributes of displaced workers, who had pursued a post-secondary technical education, and determine if their identified attributes influenced different levels of program completion (i.e., technical certificate of credit, diploma, or associate of applied science degree). The goal for conducting this type of study was to identify the level of correlation between the displaced worker's attributes and the level of program completion at a technical college. These results provided technical colleges with information that assisted them with developing effective practices and strategies that would meet the needs of displaced workers, and produce more competent employees for employers. Variables such as prior annual income level, education upon entrance, literacy level and work status and experience were explored, as they related to the different levels of program completion at a technical college.

Research Questions

The following research questions guided the study:

Question #1

Does the displaced worker's prior annual income level influence the level of program completion at a technical college?

Question #2

Does the displaced worker's education level upon entrance influence the level of program completion at a technical college?

Question #3

Does the displaced worker's literacy level influence the level of program completion at a technical college?

Question #4

Does the displaced worker's current work status and experience influence the level of program completion at a technical college?

Significance of Study

This study explored attributes of displaced workers, who had pursued a post-secondary technical education from a technical college in the state of Georgia, and determined if their attributes related to the level of program completion. Exploring this phenomenon served the purpose of having post-secondary technical education programs being designed as best as possible to facilitate displaced workers to achieve some level of program completion or the highest level possible. The results of the study provided information that supplemented existing research on the relationships between attributes and program completion among displaced workers. In addition, the findings revealed from this research study provided rich and useful data for technical college administrators in their efforts to develop and implement specific recruitment strategies for this population, the evaluation of entering students, and customizing intervention services to effectively serve this unique and growing student population. The Vice President for Academic Affairs, Student Services and Enrollment Management, and Institutional Effectiveness offices of each technical college should find the results from this study useful in their strategic planning efforts for colleges' five or ten-year improvement plans. Policy makers should also find the

results from this study useful in guiding current and future legislation on funding for displaced workers in post-secondary technical education. Noteworthy and reliable data that highlights the variables that may or may not impede the displaced worker's quest for program completion may assist legislative bodies in their decision making process on funding or defunding programs geared to equipping workers with the skills needed for a contemporary and evolving workforce.

Definition of Key Terms

For the purpose of this study, the following definitions are given for the below listed terms:

Albany Technical College: One of 24 public post-secondary institutions of the Technical College System of Georgia that provides technical education and training support for the Southwest Georgia workforce (ATC, 2014a).

Associate of Applied Science Degree: A degree granted upon completion of an academic program that requires at least two, but fewer than four, academic years of postsecondary education. This award shall have a minimum of 60 and maximum of 73 semester credit hours required for graduation, in which 15 semester credit hours of collegiate-level general education shall be required (TCSG, 2012).

Diploma: An award for completion of an academic program designed for at least one, but less than two, full academic years, which usually requires 37 to 59 semester credit hours for graduation. Diploma programs include general education and occupational courses (TCSG, 2012).

Displaced Worker: Persons 20 years of age and older who lost or left jobs because of plant or company closure or relocation where there was insufficient work available, or their position or shift was discontinued (USBLS, 2012a).

Human Capital: "An investment a person makes in education, training, experiences and medical care that increases his or her value in the workplace" (Becker, 1993, p. 16).

Long-Tenured Job: Holding a place of employment for three or more years (USBLS, 2012a).

Program Completion: Students in post-secondary technical education who successfully complete the academic requirements to earn a technical certificate of credit, diploma, or associate of applied science degree credential (TCSG, 2012).

Service Delivery Area: The counties or portions thereof in which a technical college has the responsibility of delivering technical education, adult education, and training services to businesses and industries (TCSG, 2006).

Short-Tenured Job: Holding a place of employment for less than three years (USBLS, 2012a).

Technical Certificate of Credit: An award for completion of an academic program designed for less than one year, which requires 9 to 36 semester credit hours for graduation. This award may include any combination of general education and occupational courses, specific occupational courses, or approved elective courses (TCSG, 2012).

Technical College System of Georgia: A Georgia state agency that consist of 24 public technical colleges that provide technical education, customized business and

industry training and adult education to the citizens and businesses in the state of Georgia (TCSG, 2014).

Summary

The "Great Recession" and America's turbulent economy had produced over 15 million displaced workers (USBLS, 2010). According to surveys conducted by the U.S. Bureau of Statistics, the most consistent responses for worker displacement had been insufficient work and plant or company closure and relocation (Dunne & Fee, 2010). In an effort to remedy the unemployment of the displaced worker, the United States government had encouraged unemployed, underemployed, and displaced workers to enroll in community and technical colleges and develop the skills needed to compete in our global economy. America's workforce was in demand for skilled and literate workers, who could make communities and companies attractive and profitable. However, the skills gap among workers and the low literacy rate in the 2nd Congressional District of Georgia presented a challenge for the southwest region of Georgia. In order for the nation to fulfill its goal of global competiveness and international relevance, a high quantity and quality of skilled workers will need to be produced. Skilled and vibrant workers would make positive contributions to the economic and social status of America.

Chapter II

REVIEW OF LITERATURE

This study examined the relationship between displaced workers' attributes and their level of program completion. The objective of the study was to discover the level of influence a displaced worker's attributes had on his/her level of program completion at a technical college, in order to assist technical colleges in their endeavors to develop effective practices and strategies that will best serve this unique student population. A literature review provided the fundamental rationale for the study and offered the historical context from which the study evolved.

Displaced Workers

Over 200 million people, 7% of the global workforce, were seeking jobs in 2009 (Ôner, 2012). America's contribution to the highest level of international unemployment occurred during the "Great American Recession," which began in December 2007 and officially ended in June 2009, and produced 6.9 million displaced workers (USBLS, 2012a). According to the Bureau of Labor Statistics (2008), there were 3.6 million long-tenured workers displaced during the January through December 2007 period, in which 45% lost or left their jobs due to plant or company closings or moves, 31% reported that their position or shift was eliminated, and 24% alluded to insufficient work as the reason for displacement. In a January 2010 survey of displaced workers during 2007-2009, the USBLS (2012a) reported that 15.4 million workers had experienced job displacement. The USBLS (2012a) added that during January 2009 through December 2011, 6.1 million workers had been displaced from jobs they had held for at least 3 years.

The U.S. Bureau of Labor Statics (2012b) suggested that higher unemployment rates were commonly accepted as an indicator of a recession. At the onset of the "Great American Recession," December 2007, America's unemployment rate was 5%, and had increased to 9.5% by the end of the recession in June 2009. However, America's unemployment rate increased to 10% in October 2009, 2 months after the recession officially ended. Construction and manufacturing industries both suffered the largest percentage of employment decline in the post-WWII era (USBLS, 2012b). The majority of the jobs lost in manufacturing occurred during December 2007 through June 2009, wherein two million or 14.6% of manufacturing jobs were lost (Goodman & Mance, 2011). Approximately 31% of workers in the United States experienced unemployment or underemployment during the 2009 period (Mishel & Shierholz, 2011). Since October 2009, America's unemployment rate has demonstrated slight improvement, in which the U.S. Bureau of Labor Statistics reported an unemployment rate of 6.6% for the month of January 2014 and 5.8% rate for the month October 2014 (USBLS, 2014).

Community and technical colleges were progressively playing a more prominent role in equipping workers with the skills needed for workforce re-entry. Hence, displaced workers who elected to seek advanced education were faced with the challenge of making the transition from work to college student. Speich (2011) found in a narrative study of six displaced workers, who earned associate degrees from a North Carolina community college, that regardless of prior levels of education, displaced workers who discovered and used their natural abilities for learning were likely to complete their degree requirements. In addition, the study revealed that all

participants concluded that higher education was the best option for re-employment, in which some of the participants chose their program of study based on personal interests, while others made their decision based upon self-knowledge, job stability, and by coincidence.

Skills and Literacy Gap

The economic rebound of America's economy depended heavily on American workers attaining the necessary skill level to compete in a knowledge era. Many employers agreed that workers need to possess the appropriate level of technical and literacy skills in order to be productive. For example, Zekeri (2004) suggested with the evolution of technical advancement in the workplace, skills in oral communication, written communication, public speaking, motivating and managing others, and group leadership are vital to career development and improvement. According to Rodriguez and Zavodny (2003) rates of involuntary job loss were considerably higher for less educated workers than educated workers. Therefore, the workforce challenges faced in America were accredited to a large number of American workers possessing an obsolete skill set, the rapid advancement of technology, and employers not being able to identify and acquire qualified workers, who could function effectively in an era of automation and global competiveness (Gatta, 2008).

The 2010 U.S. Census reported that 15.6% of all Georgians 25 years of age and older lacked a high school diploma or equivalence, and only 34.6% of those 25 years and older attained an education credential beyond high school. (U.S. Census, 2012b). In addition to a low percentage of the adult population in Georgia lacking a

post-secondary credential, in 2011, two South Georgia communities (Albany and Valdosta) were ranked among the top ten poorest communities in America. The Georgia community of Albany ranked as being the fourth poorest community in the nation, with 11.8% of households earning less than $10,000 per year; and the community of Valdosta ranked as third poorest in the nation, with more than 6,000 workers being unemployed during 2007 to 2011 (McIntyre, 2012).

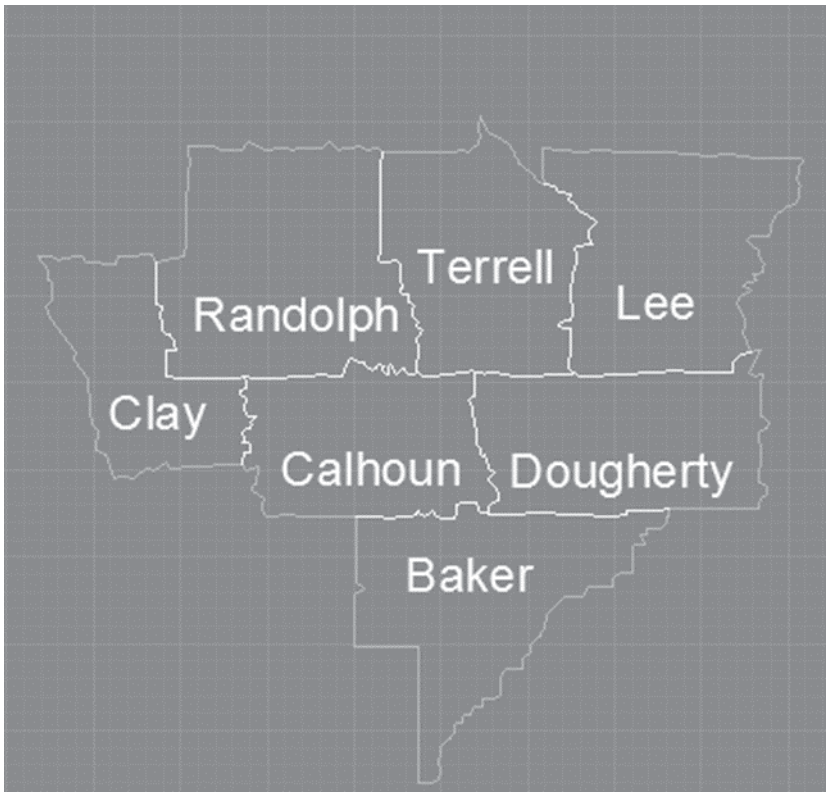

Figure 1. Map of Albany Technical College's Service Delivery Area

The seven Georgia counties that made up the Albany Technical College's service delivery area (see Figure 1): Baker, Calhoun, Clay, Dougherty, Lee, Randolph, and Terrell, reported a higher percentage of individuals, 25 years and over, lacking a high school diploma when compared to the overall state percentage (see Table 1).

Table 1

Albany Technical College's Service Delivery Area Population & Educational Attainment Percent

Location	Population 25 years and over	No HS diploma	HS diploma or GED	Some College	Associate's degree	Bachelor's degree	Graduate or professional degree
Georgia	6,242,508	15.6%	28.9%	21%	6.8%	17.7%	10.1%
Baker	2,244	17.9%	47.4%	19.1%	8.6%	6.6%	0.4%
Calhoun	4,449	32.1%	34%	18.4%	3.7%	9%	2.9%
Clay	2,138	24.2%	40.8%	18.7%	7.1%	6.5%	2.8%
Dougherty	58,045	20.7%	28.9%	26.3%	6%	10.5%	7.6%
Lee	18,236	16.2%	30.5%	27.2%	7%	10.9%	8.2%
Randolph	5,216	25.4%	38.9%	14.8%	6.6%	6%	8.4%
Terrell	6,078	34.5%	36%	17.1%	4.1%	5.4%	2.9%

Note. HS = high school diploma; GED = general education diploma. Adapted from "American FactFinder:" United States Census. (U.S. Census, 2012b)

Furthermore, a 2003 study conducted by the National Assessment of Adult Learning added that roughly half the adult population in the United States lacked the literacy skills needed to accomplish economic stability and self-sufficiency (Gatta, 2008).

Lerman (2008) reported that workers displaying basic reading, math, and writing abilities were the individuals most sought by employers, and these academic attributes were most compatible with contemporary jobs. However, according to the American Society for Training and Development (ASTD, 2012) business organizations suffered from workers lacking the appropriate level of skills in order to be productive. The data from the member survey revealed that business workers lacked the following:

- Leadership and executive skills;
- Common workplace know-how such as literacy and mathematical abilities;
- Industry specific skills;
- Management and supervision- decision-making abilities;
- Customer service skills;
- Technical and systems skills;
- Sales skills;
- Process and project management skills (Galagan, 2010).

The fact that many contemporary positions were becoming specialized positions required workers to seek advance education in order to compete for highly skilled positions or return to the workforce. Jaschik (2008) pointed out that in 35 states, more than 60% of the population did not possess an associate degree or higher; and more than 32 million adults in the United States had never attended college. Manufacturing companies had reported that few applicants for vacant positions possessed the relevant experience or skills needed to perform the work (Isidore, 2011).

Educational Experiences and Barriers for Adult Students

The participants in the Speich (2011) study were all over the age of 30, which closely reflected the growing population in post-secondary education institutions. For example, between 2000 and 2010, the enrollment of students 25 and over in post-secondary education increased 42% (NCES, 2012). In 2007, adult learners over the age 24 consisted of roughly 44% of the U.S. post-secondary education student

population (Chao, DeRocco, & Flynn, 2007); and 3 years later, in 2010, the National Center for Education Statistics (NCES) reported that 70% of students enrolled in higher education were adult learners (Kerouac & Badolato, 2010). The U.S. Department of Education (2011) reported that 40% or almost six million of American college students were 25 years of age or older. However, the levels of adult student completers in post-secondary institutions were less impressive. According to the U.S. Census Bureau (2012b), only 21.3% of American's 25 and older population averaged having some college credits, but no degree; and only 7.7% had attained an associate's degree. The NCES (2012) reported that from 2010 to 2020 enrollment of students 25 and over in post-secondary education would increase by 20%.

Apps (1981) suggested that adult students returned to school for various reasons, including, but not limited to, occupational requirements, occupational advancement, transformational life circumstances, and to enrich their lives. However, many low-skill adults were underprepared for college level work and faced significant barriers on their post-secondary journey. The barriers that adult students often faced were likely to hinder access and persistence in post-secondary education. A study in 1998 by Mathematica Policy Research discovered four consistent barriers for adult students:

- Family responsibilities;
- Lack of time;
- Scheduling of course time and place; and
- Cost of education (Chao et al., 2007).

Gregory (2010) revealed in a study of dislocated workers, who had taken career and

technical courses at a rural community college, that the most difficult barriers for dislocated workers to overcome, in regards to meeting their educational goals, were personal finances and time management skills.

In addition, Gatta (2008) suggested that locating affordable childcare and finding reliable transportation were other barriers that hindered adult student success. Similar findings were discovered by Hogan (2003) in a phenomenological study of 23 female workers, who were 25 years of age or older and had completed an Associate of Applied Science degree from a technical/community college after they experienced job displacement. The study revealed that the female workers either encountered dispositional, situational, or institutional barriers during their post-secondary education experience. Dispositional barriers that some female workers encountered were being ill-prepared for college level work, feeling overwhelmed with college work, lacking self-confidence, dislike of developmental course work, and fearing that they would not "fit in" with traditional college-age students. Barriers that were situational in nature included low income, marital problems, single parent, health problems, and dispiriting and non-supportive family members and friends. The institutional barriers included meeting the math/algebra requirements and averaging five to forty hours each week of outside the classroom work.

Nonetheless, while the number of adults seeking a post-secondary education had increased, research showed that more than 37 million adults were interested in entering a post-secondary institution, but other factors impeded on their participation (Chao et al., 2007). Merriam, Caffarella, & Baumgartner (2007) suggested that there are five apparent reasons why adults are dissuaded from participating in post-

secondary education:

- Personal problems (e.g., child care, family problems, personal health);
- Lack of self-confidence;
- Educational cost;
- Lack of interest in formal education; and
- Lack of interest in available courses (pp. 66-67).

Adult Student Persistence

Research suggested that adult or older learners were less probable to persist in their educational journey when compared to their younger counterparts (McGivney, 2004). On the other hand, Crapps (2012) suggested that adult students are more inclined to earn higher grade point averages (GPAs) and have higher aptitude and psychosocial scores than their younger counterparts. However, the reasons reported by adult learners for withdrawing from courses were similar to the reasons stated by younger students (McGivney, 2004).

Crapps (2012) reported that adult students who failed to persist in college withdraw because of job loss, health issues, or shattered marriages. McGivney (2004) identified several reasons that specifically contribute to adult students not persisting in post-secondary education. First, personal factors such as work, home, family obligations, caring responsibilities or health issues may interrupt the adult student's educational activities and cause them to completely withdraw from school. Second, the lack of family or partner support may impede on the adult student's completion endeavor. Male adult students were found to receive greater support from their significant others than female adult students. Third, adult students were more apt

to experience financial struggles than younger students. McGivney (2004) suggested that research supported a direct correlation between low student retention levels and high levels of financial hardship. Fourth, adult students who were frustrated or discontented with an institution or course were more likely to desert a program before completion than those adult students who were content with their courses and the institution. Crapps (2012) suggested that the campus environment was vital for adult students in delicate educational or life circumstances. McGivney (2004) reported that adult students who fail to establish a sense of belonging to the institution, for which they were enrolled, often failed to persist. Goble, Rosenbaun, and Stephan (2008) added that the size of an institution, the institution graduation rate, and the quantity of part-time faculty employed by an institution had a significant association with individual completion. Finally, McGivney (2004) suggested that incorrectly selecting the wrong course was a significant factor in premature withdrawal from the program. Institutions sometimes coerced students into making inappropriate or hasty course selections which altered or derailed the student's completion track.

In addition to identifying factors that may have contributed to the adult student's non-persistence, McGivney (2004) also identified several factors that may have contributed to the adult student's persistence. First, adult students appeared to be more motivated than their younger counterparts because they had forfeited or delayed other opportunities in order to participate in the education process; they desired to prove to themselves and others that they were capable of learning and acquiring a credential; or because they were seeking employment or career advancement. Merriam et al. (2007) also pointed out that adult learners appeared to display self-

directed behavior in learning situations when their technical skills correlated with the learning process, the subject matter had familiarity, learners were confident in their abilities, and learners were committed to the learning process.

Second, McGivney (2004) suggested that adult learners were more likely to persist when they were encouraged by family members or significant others and had a reliable source of financial support. Third, persistence rates of adult students may have improved if prospective students were advised properly of course content, workload, and academic and financial support, before actual enrollment. Crapps (2012) suggested that faculty advising should consist of helping students select an appropriate major, establish a strategy for course sequence, and assist students with the process of transferring to other institutions after completion. Finally, McGivney (2004) suggested that adult students were less likely to completely withdraw from school if institutions promptly followed-up with those students who were at-risk of not persisting. Crapps (2012) added that the purpose of early-alert systems was to identify students who were at-risk of not persisting before they were beyond help and employ effective intervention strategies.

Most displaced workers have a desire to re-enter the workforce as soon as possible. In order to accomplish this objective, Ginsberg and Wlodkowsi (2009) suggested that goals established by adult learners were most effective when they were defined clearly. Wlodkowsi and Ginsberg (1995) suggested that success for the non-traditional student or adult learner was achieved when the learning experience(s) of the student had personal relevance and the student had a voice in the learning process. Torraco (2008) discovered in a multiple-case-study of nine community colleges that

the majority of graduates interviewed from occupational programs such as Heating, Ventilation, and Air Conditioning (HVAC), Nondestructive Testing (NDT), and health care programs, identified applied learning experiences such as labs and work-based learning as highly beneficial methods for cultivating skills needed after program completion.

Summary

The "Great American Recession" produced 15.4 million displaced workers from short-tenured and long-tenured jobs, in which most workers lost or left their employment due to plant or company closure or relocation, position or shift being eliminated, and not enough work (USBLS, 2008). An immense number of job losses during the "Great American Recession" were in construction and manufacturing. In an effort to remedy the unemployment of the displaced worker, the United States government had encouraged the unemployed, underemployed and displaced workers to enroll in community and technical colleges and develop the skills and education needed to compete in a global economy. The U.S. Bureau of Labor Statistics had projected that during the next decade, 45% of job openings would be "middle-skill" positions; therefore, requiring an education beyond high school (Moltz, 2009).

The future of the nation's global competiveness and international relevance depended heavily on the quantity and quality of skilled workers produced who would make positive contributions to the economic and social status of America. As America's post-secondary institutions would continue to experience an increase in adult student enrollment. The NCES (2012) had projected that adult student enrollment would continue to ascend, up to the year 2020. As adult students find

their place in post-secondary education, they often encounter barriers that hinder their persistence in post-secondary education. Therefore, understanding the factors that may impede or hinder adult student persistence, and developing effective intervention strategies would be vital to the process of assisting adult students and displaced workers with achieving their educational goals. It was important for post-secondary technical education institutions be successful in assisting displaced workers with persistence because the essence of America's economic future was entrenched in the advance education and specialized skill set of its workforce.

Chapter III

METHODOLOGY

In order to compete in a knowledge basis era, individuals, communities, and nations are required to invest in the education and training of human beings. Lut (2010) suggested that a society that was willing to invest in human capital has improved its chance for continuous economic growth and employment for workers. According Becker (1993) human capital was defined as the accumulation of education, training, and medical care to improve an individual's ability to earn and produce more. Becker (1993) argued that "education and training are the most important investments in human capital" (p. 17). Therefore, this study explored the attributes of displaced workers, who had pursued a post-secondary technical education, and determined if their identified attributes influenced different levels of program completion (i.e., technical certificate of credit, diploma, or associate of applied science degree). Chapter 3 presents the research questions that were explored, and describes the research design and data analysis that was used to conduct the study.

Research Questions

The research questions that guided this study were as follow:

1. Does the displaced worker's prior annual income level influence the level of program completion at a technical college?
2. Does the displaced worker's education level upon entrance influence the level of program completion at a technical college?

3. Does the displaced worker's literacy level influence the level of program completion at a technical college?
4. Does the displaced worker's current work status and experience influence the level of program completion at a technical college?

Research Design

This research study employed a quantitative approach, in which a correlational research design and descriptive and inferential statistics were used to investigate and describe the level of relationship between the level of program completion and displaced worker's attributes. According to Fraenkel, Wallen, and Hyun (2012), correlational research examines the degree of relationship between variables without manipulation or intervention from the researcher, other than managing the instrument that was used to collect the preferred data. Correlational research was deemed appropriate for this type of study because this approach encompassed the practice of investigating relationships that might or might not exist between variables and predicting probable outcomes, and it allowed the researcher to infer about a population based on results from a sample (Fraenkel et al., 2012). A correlational research design was selected in order to describe existing relationships between attributes of displaced workers and level of program completion. A correlation coefficient was used in correlational studies in order to describe the level to which two or more quantifiable variables were associated (Fraenkel et al., 2012).

In order to display an accurate depiction of the population being studied, descriptive statistics such as the means and standard deviation were calculated. These descriptive techniques allowed the researcher to show the frequency of distribution

among the variables. Tables were used in order to provide the reader with a pictorial view of data results. In addition, inferential statistics such as Independent *t* test and Analysis of Variance (ANOVA) were calculated in order to determine if the means of groups were significantly different. Fraenkel et al. (2012) suggested that inferential statistics such as ANOVA was used when more than one independent variable was being explored (i.e. attributes- education level, income level, literacy level, and work history).

Following approval by Valdosta State University's Institutional Review Board (IRB) (see Appendix E), data was collected by retrieving the list of students and/or graduates, who were identified as displaced workers, from Albany Technical College's Admission and Financial Aid offices during the Fall 2009 through Summer 2014 academic terms. The Admission and Financial Aid offices provided data related to the number of students and/or graduates who were identified as displaced workers, their level of education upon admission to the college and their level of degree completion. In addition, the College's Admission office provided data related to the literacy level as reflected by COMPASS scores of the study's participants. The Financial Aid office of the college provided the data related to the participants' education and program completion level. Data related to the participants' income level, work history and type of work performed was collected from a self-selected group of participants who completed an online survey instrument, which was administered through the Abode Form Central platform.

Definition of Variables

Correlational research was defined as the practice of investigating relationships that might or might not exist between variables and predicting probable outcomes (Fraenkel et al., 2012). According to the Technical College System of Georgia (2012), program completion was defined as students in post-secondary technical education, who successfully completed the academic requirements to earn a technical certificate of credit, diploma, or associate of applied science degree credential. The program completion levels were identified as the dependent variables for this study. The attributes of displaced workers were considered certain qualities that the students possessed such as education level upon entrance, prior annual income level, literacy level, and work status and experience, and these attributes served as the independent or predicator variables for this study.

Description of Population

The participants in this study were students and graduates who attended Albany Technical College, who might have received WIA (Workforce Investment Act) benefits, and were identified as a displaced worker during the Fall 2009 through Summer 2014 academic semesters. The targeted population consisted of approximately 421 possible participants, in which 163 participants were self-selected and included in the closed-ended questionnaire survey sample. The participants who were identified as displaced workers had sought a technical education credential from Albany Technical College, during the Fall 2009 to Summer 2014 academic terms. These individuals had suffered job displacement due to company or organization closure, company or organization downsizing, abolishment of shift, or insufficient

work available.

Research Procedures

The central focus of this research study was on the attributes of displaced workers in post-secondary technical education, as they related to the different levels of program completion. This study employed a correlational design approach and inferential statistics to investigate and report the findings. Correlational research was conducted in order to clarify the relationships among variables (Fraenkel et al., 2012). The first phase of the study consisted of seeking permission from college administrators to commence with the study. The study consisted of archival data that was retrieved from Albany Technical College's admission and financial aid offices, and survey responses from a self-selected group of study participants. Attributes of the displaced workers such as education level upon entrance were retrieved from the institutions' Banner system; literacy level (as measured by COMPASS scores) data were retrieved from the institution's Admission's office; and prior annual income level and work status and experience data were retrieved from survey responses of a self-selected group of study participants.

Once written consent for conducting the study was attained from the college's chief executive officer (President), the researcher implemented the study in the summer 2014 semester by requesting the identification of those students categorized as displaced workers during the Fall 2009 to Summer 2014 academic terms from the college's admission and financial offices. The researcher allowed the respected departments, within the college, 2 weeks to gather and submit the requested information. All information requested was gathered in the allotted timeframe. Next,

the researcher developed the survey instrument by adapting survey questions from the American Community Survey of the U.S. Census Bureau to address the work history of study participants. The researcher received notification on July 23, 2014, from Valdosta State University's IRB that the study had been granted exemption status. Once the survey instrument was validated and approved by the IRB at Valdosta State University, the researcher contacted the participants by telephone, electronic mail, and/or face-to-face interviews to seek their willingness to participate in the survey phase of the study. Once a verbal or electronic commitment was attained, the participants were contacted through electronic mail and provided a brief outline for the purpose of the study. The survey questionnaire was dispatched to study participants, via electronic mail, on August 28, 2014, in order to capture the participants' work history, income level and other demographics not captured in archival data. The researcher established the deadline of September 11, 2014, for participants to complete and submit their survey responses through the Abode Form Central internet survey platform. The researcher followed-up with non-responders to the survey on three different occasions through their student e-mail accounts and with instructors in their assigned programs. Finally, the researcher collected data from survey responses on September 25, 2014, and began an analysis of data gathered on September, 26, 2014.

Instrumentation

A closed-ended questionnaire type survey was used to measure the demographics of study participants and the participants' knowledge of their employment history (see Appendix A). This survey instrument consisted of 23

questions that were adapted from the American Community Survey of the U.S. Census Bureau, relevant literature and data retrieved from the institution's Banner system. The questionnaire asked participants to indicate their gender, age range, employment and unemployment history, employment status, reason for job displacement, educational attainment, annual income level range prior to job displacement, annual income level range 6 months after program completion and their perception of technical education. The standardized questionnaire approach presented the possibility of formulating highly sophisticated affirmations about the population being investigated (Babbie, 1989). In addition, the survey questionnaire was deemed to be an efficient method for research because it is inexpensive, permits access to supplementary participants, and can be completed in a short period of time (Brock, S., 2013).

Developing the questionnaire survey instrument required the researcher to minimize internal validity threats such as location, subject attitude, subject characteristics, and mortality, by standardizing the conditions for the participants in the study (Fraenkel et al., 2012). Validity of the survey instrument was established by standardizing the questionnaire items and ensuring question items were readable and carefully worded (Babbie, 1989). The survey questions were adopted from the American Community Survey of the U.S. Census Bureau to address attributes of the displaced workers such as education level, annual income, and current work status and experience of the study participants. The American Community Survey (ACS) was a continuous monthly survey that was fully implemented in January 2005 by the U.S. Census Bureau (Starsinic, 2011).

Data Collection Procedures

Archival data from the Albany Technical College's Banner system, Admission and Financial Aid offices provided information concerning participants' contact information, program of study, program start date, completion date and level, age, gender, and education level. The participants' literacy level was determined by an analysis of their COMPASS scores from the college's Admission office. The COMPASS was a computerized placement test that assessed the student's writing, reading, and mathematics skills, and was recognized as the primary literacy placement test for the Technical College System of Georgia (TCSG, 2011b). In addition to the use of archival data, a closed-ended survey was developed and administered to163 of the study's participants in order to capture data that was related to the displaced worker's employment history and income level prior to and after program completion. The method in which data was gathered for the survey phase of the study, was through a link to the Adobe FormsCentral electronic survey platform. The survey instrument was developed by adapting questions from the American Community Survey of the U.S. Census Bureau, in order to capture the work status and experience and prior annual income level of study participants.

The survey instrument was released to a select group of volunteer participants. The participants were allowed 4 weeks to complete and submit their responses to the researcher. The responses from the participants were anonymous and received via electronic mail through the Adobe FormsCentral survey platform. There were three follow-up electronic mails dispatched to all survey participants reminding them to submit their responses before September 11, 2014.

Data Analysis

Prior annual income level, education level upon entrance, literacy level and current work status and experience might possibly influence the level of degree completion among displaced workers. The level of influence that the displaced worker's attributes (i.e., prior annual income level, education level upon entrance, literacy level, and current work status and experience) had on the level of degree completion (i.e., technical certificate of credit, technical diploma, or associate of applied science degree) was explored in this research study. Displaced workers' attributes served as the predictor or independent variables and the level of degree completion served as the predicted or dependent variables for this study. A sample of the population was gathered by purposefully selecting displaced workers who were students and/or graduates of Albany Technical College during the Fall 2009 through Summer 2014 academic terms.

Quantitative data gathered for this study was conveyed through various tables. In order to describe the population and determine if there was a relationship between the participants' attributes such as education level upon entrance, prior annual income level, literacy level, and work status and experience, the statistical software Statistical Package for Social Sciences (SPSS), version 22 was used. SPSS software performed descriptive statistics such as means and the standard deviation. Parametric techniques such as the independent *t* test and Analysis of Variance (ANOVA) were computed in order to reveal the level of relationship between the attributes of displaced workers (i.e., education level upon entrance, prior annual income level, literacy level, and work status and experience) and their level of degree completion (i.e., certificate of

credit, technical diploma, and associated of applied science degree). However, before descriptive statistics were computed the researcher examined data entry for errors, outliners, and test for normality was performed in SPSS. Data entry errors that were discovered and had the tendency to skew the distribution of data were modified to reflect accuracy (Fields, 2009). For example, 427 study participants were initially identified as displaced workers by the College's financial aid office during the Fall 2009 through Summer 2014 academic terms. After reviewing data received from the financial aid office, the researcher discovered six cases with ages below the age established for the intended population. Therefore, those six cases were removed from the study.

The rationale for performing the independent *t* test in this study was that the sample came from the same population. According to Young and Veldman (1981), random sampling of study participants was required to meet the assumption of the *t* test. However, the participants in this study were not randomly selected, but self-selected by the researcher from a generated list of students and graduates from the Fall 2009 to Summer 2014 terms at Albany Technical College, who were identified as displaced workers. The assumption of the *t* test was met since responses came from different people and ensuring that the sample was derived from a normal distribution (Young & Veldman, 1981). In addition, homogeneity of variance was calculated in order to validate variances between the prior annual income level, education level upon entrance, literacy level and work status and experience of the participants (Fields, 2009). The independent *t* test was deemed an appropriate statistical test because it was used to determine whether the correlation coefficient calculated on a

sample was significant (Fraenkel et al., 2012).

Once descriptive statistics were calculated, a one-way Analysis of Variance (ANOVA) was conducted to compare the level of influence the displaced workers' prior annual income level, education level upon entrance, literacy level and current work status and experience had on their level of degree completion. The ANOVA was used to determine whether there were significant differences between two or more groups (Fraenkel et al., 2012). The ANOVA suggested that using group means to project the level of influence attributes had on the level of degree completion was significantly better than using the grand mean (Fields, 2009). In an effort to control the Type I error rate, the Tukey HSD test was performed on ANOVA results. According to Fields (2009), the Tukey HSD test was more powerful than other statistical test, such as Dunn and Scheffé.

Levene's test was performed in order to determine if the assumption of equal variance had not been violated. However, in cases where the results from the homogeneity of variance assumption were found to be violated, Welch's F option was used to determine the F-ratio. Welch's F option was deemed an appropriate alternative to Levene's test, in order to determine whether the variances in two independent variables were equal (Fields, 2009). The researcher selected the independent *t* test and ANOVA parametric techniques in order to offer a genuine description of the population being studied and to increase the likelihood of revealing an authentic relationship or non-relationship among the displaced worker's attributes and the level of program completion.

Assumptions of the Study

This study explored the attributes of displaced workers, who had pursued a post-secondary technical education from a technical college in the state of Georgia, to determine if their attributes influenced their level of program completion. The researcher assumed that the archival data that retrieved from the institution's Banner system and Admission Office was accurate. In addition, the researcher assumed that participants provided honest and accurate responses in the survey questionnaire.

Limitations of the Study

Challenges were expected and encountered with conducting this level and method of research. The challenges that were anticipated for this type of research design were: (a) institutional recorded documents might not capture all of the targeted population; (b) having sufficient time to conduct the study; (c) locating and contacting participants for survey distribution; (d) contact information retrieved from the college's admission office might not be accurate or out-dated; (e) low response rate from survey request; and (f) rather than collecting data from the entire United States population, the U.S. Census Bureau collected data from a sample of the population. Therefore, data from all American Community Surveys (ACS) were estimates. All ACS estimates had a 90% margin of sampling error in the survey, which was the U.S. Census Bureau's standard level for margin of error (Starsinic, 2011). Therefore, the validity of the survey instrument was not reflected in the margin of sampling error for ACS estimates. Addition, this study was limited to a single technical college in the state of Georgia. Therefore, the findings should not be generalized to students, who experienced employment displacement and were

enrolled at other technical colleges throughout the United States.

Approvals

The researcher secured permission to conduct the study by first seeking approval from his dissertation committee and the chief executive officer of Albany Technical College. In addition, the researcher secured permission to conduct the survey portion of the study from the IRB at Valdosta State University. The researcher received direction and guidance from his dissertation committee, in regards to conducting the study.

Researcher Controls

The researcher was an employee of Albany Technical College and a mid-level administrator at the College. Therefore, the researcher had a professional relationship with a portion of the study participants. In some cases, study participants were direct subordinates of the researcher. The researcher was of the belief that his professional relationship with study participants would encourage participants to willingly and openly respond to the survey instrument and have a genuine interest in the findings of the study.

Chapter IV

RESULTS

The attributes of a displaced worker might possibly contribute to the level of program completion at a technical college. The effect of a displaced worker's attributes (prior annual income level, education level upon entrance, literacy level and current work status and experience) on the level of program completion was evaluated in this research study. The purpose of this research study was to investigate the possible relationships between displaced workers' attributes and the level of program completion from a technical college in southwest Georgia. This chapter presents the questions that were explored, demographic data of the study and the statistical results from descriptive and inferential statistics performed in the study.

The attributes of displaced workers at Albany Technical College explored in this study were: prior annual income level, education level upon entrance, literacy level and current work status and experience. The literacy levels were measured through participants' COMPASS scores. The targeted population consisted of all students enrolled at Albany Technical College during the academic terms of Fall 2009 to Summer 2014, who were identified as displaced workers by the college's admission and financial aid offices. The list of possible participants for the study consisted of 427 individuals identified as displaced workers during the academic terms of Fall 2009 to Summer 2014. However, six of the individuals identified as displaced workers were removed from the study because their age at the time of admission to the college did not fall within the study's definition of a displaced worker. The study defined a displaced worker as a person who was 20 years of age

and older who lost or left jobs because of plant or company closure or relocation and where there was insufficient work available, or their position or shift was discontinued (USBLS, 2012a). Based on the definition for the time period, this study's population consisted of (N = 421) displaced workers. In addition to the analysis of archival data gathered from the college's admission and financial aid offices, the researcher's additional findings were established on the 82 participants (50%) out of 163 (38.7%), who volunteered to participate in the survey portion of the study. These participants completed and submitted responses through the survey instrument posted on the Abode Form Central internet platform. Descriptive statistics for the targeted population's demographics such as age, gender, race, literacy level as measured by COMPASS scores, education level upon entrance, prior annual income level, work status and experience, and program completion level were computed. The researcher used an independent *t* test statistical analysis to determine whether the correlation coefficient calculated on the sample population was statistically significant. In addition, a one-way Analysis of Variance (ANOVA) statistical test was used to compare the level of influence the displaced workers' attributes (i.e., education level, literacy level, income level, and work status and experience) had on their level of program completion. Levene's test was computed to estimate the assumption of equal variance between groups on all statistical test performed.

Research Questions

The purpose of this chapter is to provide a comprehensive report on the study's findings and discuss the analysis of data that was guided by four research questions. The following questions were used to investigate the level of influence a displaced worker's attributes had on the level of program completion at a technical college:

1. Does the displaced worker's prior annual income level influence the level of program completion at a technical college?
2. Does the displaced worker's education level upon entrance influence the level of program completion at a technical college?
3. Does the displaced worker's literacy level influence the level of program completion at a technical college?
4. Does the displaced worker's current work status and experience influence the level of program completion at a technical college?

Findings

Demographic Data

In the first phase of the study, archival data retrieved from the Albany Technical College's Admission and Financial Aid offices identified 427 individuals, who had experienced worker displacement during the Fall 2009 through Summer 2014 academic terms. Six of those individuals identified as displaced workers were removed from the study as a result of their age at the time of admission to the college did not fall within the study's definition of a displaced worker. Therefore, descriptive statistics were computed on 421 participants. In addition to archival data, the

researcher e-mailed a survey link to 163 self-selected participants on August 28, 2014. The survey phase of the study consisted of mostly 161 (98.7%) students who were currently enrolled in a technical program at Albany Technical College during the Fall 2014 academic term. All participants were given until September 11, 2014 to complete the survey and submit their responses through the Abode Form Central survey internet platform. The researcher dispatched three reminders, via e-mail, to the participants' student and personal e-mail accounts and three reminders to the program faculty members, via their Albany Technical College e-mail account, in which the participants were assigned. On September 25, 2014, 82 (50.31%) participants had completed and submitted responses to the survey.

Descriptive Analysis - Archival

Archival data revealed that the sample population was fairly middle aged, (*M* = 40, *SD* = 10.72), in which 57% of the population was classified as male and 43% as female (see Tables 2 and 3).

Table 2

Archival Data Minimum, Maximum, Mean and Standard Deviation of Displaced Workers by Age

Minimum	Maximum	*M*	*(SD)*
20	65	40.04	(10.719)

Note. M = mean; SD = standard deviation.

Table 3

Archival Data Frequency and Percent of Displaced Workers by Gender

Gender	Frequency	Percent
Male	240	57
Female	181	43
Total	421	100

An overwhelming majority of the population 309 (73.4%) recorded their ethnicity or race as being African American or Black. In addition, approximately one-quarter (25.4%) of the population was white (see Table 4).

Table 4

Archival Data Frequency and Percent of Displaced Workers by Race

Race	Frequency	Percent
Black or African American	309	73.4
White	107	25.4
Black/White	2	.5
Hispanic	2	.5
Other	1	.2
Total	421	100

A majority, 299 (71%), of the sample population from the archival data had achieved the education level of a high school diploma at the time of admission to the college. An additional 95 (22.6%) held the education level of a General Education Diploma (GED). Therefore, collectively almost 94% of the population only attained a high school education or equivalent at the time of admission to the college. A further interesting observation was that 12 (2.8%) of the population had achieved an education level above high school and 15 (3.6%) had not achieved a high school diploma or general education diploma (GED) at the time of admission to the college (see Table 5).

Table 5

Frequency and Percent of Displaced Workers by Education Level Upon Entrance

Education Level	Frequency	Percent	*M*	*(SD)*
HS	299	71	1.94	(1.39)
GED	95	22.6	2.07	(1.42)
No HS or GED	15	3.6	1.53	(1.96)
AAS	6	1.4	2.33	(1.21)
BS	6	1.4	1.83	(1.47)
Total	421	100	1.96	(1.42)

Note. GED = general education; HS = high school diploma; AAS = associate of applied science degree; BS = Bachelor of Science degree.

In accordance to the College's admission policy, each student was required to take the Computer-Adaptive Placement Assessment and Support System (COMPASS)

placement exam or transfer in satisfactory grades of "C" or higher from another accredited college or university or Scholastic Achievement (SAT) scores of 400 Math or 430 Verbal or a 17 composite score on the American College Test (ACT) exam for diploma level admission. However, in order to transfer in SAT scores for the associate of applied science degree level, the student was required to have scores of 440 Math or 480 Verbal or a verbal 20 and math 19 on the ACT exam (ATC, 2014c). In addition, the minimum COMPASS scores required in reading, mathematics, writing, and algebra for each program level (technical certificate of credit, diploma, associate of applied science) were located on Albany Technical College's official web page (see Appendix A).

Table 6 reports the findings regarding study participants' COMPASS scores in the subject areas of Mathematics, Writing, English, Algebra and scores transferred into the college for admission requirements.

Table 6

Mean and Standard Deviation of Displaced Workers by COMPASS Scores

COMPASS	*N*	*M*	*(SD)*
Mathematics	357	40.1	(17.41)
Writing	358	58.8	(26.1)
Reading	362	78.6	(13)
Algebra	228	29.32	(15.8)
Transfer	70	2.64	(1.96)

Sixty-five (15.44%) of the participants had Assessment of Skills for Successful Entry and Transfer (ASSET) scores that were accepted for admission requirements. The

researcher used a table provided by the Technical College System of Georgia to link ASSET scores to COMPASS scores (see Appendix B). There were 70 (16.6%) participants who had satisfactory grades ("C" or higher) transferred in from another accredited college or university to meet admission requirements. The researcher computed the mean COMPASS score and standard deviation for the various subject areas: N = 357 Mathematics COMPASS scores; N = 358 Writing COMPASS scores; N = 362 Reading COMPASS scores; and N = 228 Algebra COMPASS scores (see Table 6).

There were three levels of program completion identified among study participants: 1) technical certificate of credit; 2) technical diploma; and 3) associate of applied science degree. A total of 262 credentials were awarded to study participants during the Fall 2009 through Summer 2014 academic terms. Additionally, 21 (5%) of program completers attained more than one credential, and 64 (15%) had completed at least one credential and were seeking another credential during the Fall 2014 academic term. There were little over one-third, 161 (38.2%), of study participants enrolled in technical programs at the time the study was conducted (Fall 2014). One hundred fifty-five (37%) participants received only one award during Fall 2009 through Summer 2014 terms. The researcher discovered that 84 (20%) of study participants left the college before meeting their academic requirements for any level of program completion. In addition, approximately 165 (63%) of participants received awards at the technical diploma level, 71 (27%) received awards at the technical certificate of credit level and 26 (10%) received awards at the associated of applied science degree level. It is interesting to note that approximately 85 (20%) of the

students completed more than one award and some were pursuing another credential (see Tables 7 and 8).

Table 7

Frequency and Percent of Credentials Awarded

Total Awards	Frequency	Percent
Technical Diploma	165	62.98
Technical Certificate of Credit (TCC)	71	27.1
Associate of Applied Science (AAS)	26	9.92
Total	262	100

Table 8

Frequency and Percent of Displaced Workers with One Award, Multiple Awards, Enrolled Fall 2014 and Withdrew Without Award

Award Status	Frequency	Percent
Only one award	155	36.8
Enrolled 2014 w/o award	97	23
Withdrew w/o award	84	20
Completed at least one award & enrolled Fall 2014	64	15.2
Completed more than one award	21	5
Total	421	100

Albany Technical College offered a wide range of credit bearing technical programs during the period of the study. At the time of the study, the college offered 53 technical programs (see Appendix C), in which 40 of the 53 programs involved the participants in the study. Among the sample, the Air Conditioning Technology (AIRC) program recorded the highest number of awards granted, 16 (23%), at the technical certificate of credit level, followed by Commercial Truck Driving (CDTL), 9 (13%), and Welding and Joining Technology (WELD), 6 (9%), (see Table 9). The Diesel Equipment Technology (DIET) program recorded the highest number of awards granted, 22 (13%), at the technical diploma level, followed by Culinary Arts Technology (CUUL), 14 (9%), and Air Conditioning Technology (AIRC), 12 (7%), (see Table 10). The Computer Information Technology (CIST), Business Logistics (LOGI) and Business Management (MGMT) programs accounted for over one-third,

9 (35%), of awards granted at the associate of applied science degree level (see Table 11). In addition to awards granted, 32 of 53 programs offered at the college involved participants of the study during the Fall 2014 academic term. Out of the 161 study participants who sought a credential during the Fall 2014 term, a vast majority, 137 (85.1%), of the participants sought a technical diploma credential. The Business Management Technology (MGMT) and Hotel, Restaurant, and Tourism Technology (HRTM) programs were among the most popular programs sought by study participants during the Fall 2014 academic term at the technical diploma level; and Accounting Technology (ACCT) and Hotel, Restaurant, and Tourism Technology (HRTM) programs were most popular at the associate of applied science degree level (see Table 12).

Table 9

Frequency and Percent of Programs with Awards Granted at the Technical Certificate of Credit Level

Program of Study	Frequency	Percent
AIRC	16	22.54
CDTL	9	12.68
WELD	6	8.45
ELTR	4	5.63
LOGI	4	5.63
MGMT	4	5.63
CIST	3	4.23
CRJU	3	4.23
CARP	3	4.23
ACCT	2	2.82
ACRP	2	2.82
EMSP	2	2.82
IDSY	2	2.82
AUTT	1	1.41
CUUL	1	1.41
DFTG	1	1.41
DIET	1	1.41
ECCE	1	1.41
HIMT	1	1.41
HORT	1	1.41
HRMT	1	1.41
MAST	1	1.41
PCAT	1	1.41
PCMT	1	1.41
Total	71	100

Table 10

Frequency and Percent of Programs with Awards Granted at the Technical Diploma Level

Program of Study	Frequency	Percent
DIET	22	13.33
CUUL	14	8.49
AIRC	12	7.27
BUSN	10	6.06
COSM	10	6.06
WELD	10	6.06
ELCR	9	5.46
CRJU	8	4.85
ACRP	7	4.24
AUTT	7	4.24
ELTR	6	3.64
LOGI	6	3.64
MGMT	6	3.64
ECCE	4	2.42
MKTG	4	2.42
MSNR	4	2.42
CARP	3	1.82
HRTM	3	1.82
MAST	3	1.82
DENA	2	1.21
EMSP	2	1.21
HIMT	2	1.21
SURG	2	1.21
BFMT	1	.61
CIST	1	.61
DFTG	1	.61
ELCR-TELE	1	.61
FRSC	1	.61
HORT	1	.61
PCMT	1	.61
PLBG	1	.61
PNSG	1	.61
Total	165	100

Table 11

Frequency and Percent of Programs with Awards Granted at the Associate of Applied Science Degree Level

Program of Study	Frequency	Percent
CIST	3	11.54
LOGI	3	11.54
MGMT	3	11.54
CMTT	2	7.69
ELCR	2	7.69
HRTM	2	7.69
ACCT	1	3.85
BUSN	1	3.85
CETC	1	3.85
CRJU	1	3.85
CUUL	1	3.85
ECCE	1	3.85
EMSP	1	3.85
IDSY	1	3.85
MAST	1	3.85
MKGT	1	3.85
PHAR	1	3.85
Total	26	100

Table 12

Frequency and Percent of Programs Pursued at the Technical Diploma and Associate of Applied Science Degree Level during the Fall 2014 Academic Term

Program of Study	Frequency	Percent
HRTM	15	9.32
BUSN	13	8.1
MGMT	13	8.1
CRJU	11	6.83
LOGI	8	4.97
CIST	7	4.35
ECCE	7	4.35
AIRC	6	3.73
WELD	6	3.73
ACCT	5	3.11
CARP	5	3.11
COSM	5	3.11
MKTG	5	3.11
BFMT	4	2.48
CUUL	4	2.48
DIET	4	2.48
HIMT	4	2.48
MSNR	4	2.48
PLBG	4	2.48
PNSG	4	2.48
AUTT	3	1.86
SURG	3	1.86
ELCR	2	1.24
HORT	2	1.24
PCMT	2	1.24
DFTG	1	.62
ELTR	1	.62
EMSP	1	.62
EMSP	1	.62
ENGT	1	.62
MAST	1	.62
RNSG	1	.62
Total	161	100

Descriptive Analysis - Survey

In the survey phase of the study, 82 participants responded to a 23 question survey, in which 49 (60%) of the respondents were over the age of 40 (see Table 13), and 46 (56%) were identified as female and 36 (44%) male. The age and gender structure of Albany Technical College was very similar to the survey population. For example, the National Center for Education Statistics (2014) reported that during the Fall 2013 academic year, 62% of the student population at Albany Technical College was over the age 25 and 60% of the population were female and 40% male. Similar to the results from the archival data, a majority, 57 (70%), of the survey population identified their ethnicity or race as being African American or Black (Table 14). The race/ethnicity composition of the survey population was comparable to the total population at Albany Technical College. According to the National Center for Education Statistics (2014), the student population at the college during the Fall 2013 academic year was 79% Black or African American and 19% White.

Table 13

Survey Data Frequency and Percent of Displaced Workers by Age Group

Age Group	Frequency	Percent
Over 40	49	60
36 to 40	12	15
31 to 35	9	10.5
26 to 30	8	10
20 to 25	4	4.5
Total	82	100

Table 14

Survey Data Frequency and Percent of Displaced Workers by Race

Race	Frequency	Percent
Black or African American	57	70
White	24	29
Native American	1	1
Hispanic or Latino	0	0
Asian	0	0
Total	82	100

Question four in the survey was “Are you currently employed?” All 82 of the survey participants provided a response to this question. The responses to this question revealed that a majority 46 (56%) of the survey participants were unemployed at the time of the study (see Table 15). Those individuals who provided the answer “no” to this question were asked to move on to Question 6. Of the remaining 44% who indicated they were employed at the time of the study, 70% revealed, in Question 5, that they had full-time employment status (more than 30 hours per week) (see Table 16). However, a vast majority 72 (88%) of the respondents revealed in Question 6, that they had been unemployed for a period of time in the past five years (see Table 17).

Table 15

Frequency and Percent for Survey Question 4

Question 4- Are you currently employed?	Frequency	Percent
No (skip to question 6)	46	56
Yes	36	44
Total	82	100

Table 16

Frequency and Percent for Survey Question 5

Question 5- What is the status of your current employment?	Frequency	Percent
Full-time (more than 30 hours per week)	26	70
Part-time (less than 30 hours per week)	11	30
Total	37	100

Table 17

Frequency and Percent for Survey Question 6

Question 6- Have you been unemployed for any amount of time in the past five years?	Frequency	Percent
Yes	72	88
No (skip to question 8)	10	12
Total	82	100

Question 7 in the survey was "How long were you unemployed?" There were a total 75 responses to this question, to which a vast majority of 39 (52%) indicated that they had been unemployed for more than 18 months (see Table 18). Question 8 asked the question, "What was the reason for your job displacement?" There were 74 responses to this question, to which 27 (36%) suggested that the reason for their job displacement was "limited work available" and 26 (35%) attributed their job loss to "company or organization closure." In addition, 19 (26%) of the respondents

attributed their job loss to “termination” (see Table 19). Almost half 40 (49%) of the respondents reported that they had experienced job displacement two to four times in their adult life, in which 36 (46%) indicated that the longest amount of time they had been without full-time employment was over 24 months (see Tables 20 and 21).

Table 18

Frequency and Percent for Survey Question 7

Question 7- How long were you unemployed?		
Length of Unemployment	Frequency	Percent
More than 18 months	39	52
Between 6 to 12 months	14	19
Between 12 to 18 months	12	16
Less than 6 months	10	13
Total	75	100

Table 19

Frequency and Percent for Survey Question 8

Question 8- What was the reason for your job displacement?	Frequency	Percent
Limited work available	27	36
Company or organization closure	26	35
Termination	19	26
Company merger	2	3
Shift abolished	0	0
Total	74	100

Table 20

Frequency and Percent for Survey Question 10

Question 10- How many times have you experienced job displacement in your adult life?	Frequency	Percent
2-4 times	40	49
Once	34	43
5-7 times	5	6
More than 7 times	2	2
Total	82	100

Table 21

Frequency and Percent for Survey Question 11

Question 11- What is the longest amount of time you have been without a full-time job in your adult life?	Frequency	Percent
Over 24 months	36	45.7
Between 6-18 months	21	26.6
Between 18-24 months	11	13.9
Less than 6 months	11	13.9
Total	79	100

Question 12 asked the participants, "What type of work had they experienced in the past five years?" There were 80 responses to this question in which 22 (28%) revealed that they had manufacturing experience, 20 (25%) reported that they had other experiences such as service or government, 13 (16%) reported that they had professional experience, 12 (15%) reported they had retail trade experience, 9 (11%) reported that they had business experience, and 3 (4%) reported that they had agricultural experience (see Table 22). In addition, 32 (41%) of the respondents indicated that their employment status was full-time (more than 30 hours per week); 22 (28%) reported that they were unemployed at time the study was being conducted; 17 (22%) indicated that they had experience both full-time and part-time work in the last 5 years; 6 (8%) reported that they had part-time employment; and 2 (3%) reported that they had seasonal employment (see Table 23).

Table 22

Frequency and Percent for Survey Question 12

Question 12- Which of the following best describe the type of work you have experienced in the last five years?	Frequency	Percent
Manufacturing	22	28
Other (Service or Government)	20	25
Professional	13	16
Retail trade	12	15
Business	9	11
Agricultural	3	4
Wholesale trade	1	1
Total	79	100

Table 23

Frequency and Percent for Survey Question 9

Question 9- Which of the following best describe your employment status in the last five years?	Frequency	Percent
Full-time (FT)	32	40.5
Unemployed	22	27.5
Both FT & PT	17	22
Part-time (PT)	6	7.5
Seasonal	2	2.5
Total	79	100

Note. FT = full-time employment; PT = part-time employment.

In Question 13, the participants were asked "What was your highest level of education attainment before you sought a credential from a technical college?" There were a total of 80 responses to this question, of which 31(38%) of the respondents declared to have some college, but no degree, 25 (30%) declared to have a high school diploma, 20 (24%) declared to have a general education diploma GED, 3 (4%) declared to have an Associate of Applied Science (AAS) or Associate of Science (AS) degree, and 3 (4%) declared to have a Bachelor of Science (BS) degree before they enrolled into a technical college (see Table 24). In fact, at the time the study was being conducted, 28 (35%) reported that they were in their second to fourth semester as a student in post-secondary education, 21 (26%) reported that they had been enrolled in post-secondary education more than four semesters, and 1 (1%) reported to be in their first semester. There were 9 (11%) graduates from a post-secondary education institution and 21 (26%) graduates, who had continued their education (see Table 25).

Table 24

Frequency, Percent, Mean and Standard Deviation for Survey Question 13

Question 13- What was your highest level of education attainment before you sought a credential from a technical college?	Frequency	Percent	*M*	*(SD)*
Some college (no degree)	31	37.8	1.2	(.49)
High school diploma	25	30.5	.95	(.49)
General education diploma	20	24.4	.75	(.58)
AAS or AS degree	3	3.7	1.7	(.58)
BS degree	3	3.7	1	(1.4)
Masters Degree or above	0	0	0	(0)
Total	82	100	1.26	(1.052)

Table 25

Frequency and Percent for Survey Question 14

Question 14- Please select one of the following that best describe your current status in post-secondary education?	Frequency	Percent
Second to Fourth semester	28	35
More than four semesters	21	26.25
Graduate/Continued Education	21	26.25
Graduate	9	11.25
First semester	1	1.25
Total	80	100

Question 15 was "Which level of program completion are you seeking or have sought in technical education?" There were a total of 81 responses to this question, to which almost half 40 (49%) of the respondents were in the process of seeking or had completed the requirements for a technical diploma, 11 (14%) associate of applied science degree, and 6 (7%) technical certificate of credit. It is interesting to note that 24 (30%) were in the process of seeking or had completed all three levels of program completion: technical certificate of credit, technical diploma, and associate of applied science degree (see Table 26). In Question 16, over two-thirds 45 (68%) of the respondents reported that their highest level of program completion in technical education was at the technical diploma level (see Table 27). In addition, study participants were asked, in Question 17, if they were planning to continue their education at a 4-year university or college? There were a total of 80 responses to this

question to which almost two-thirds 50 (63%) indicated that they planned to continue their education at a 4-year institution (see Table 28).

Table 26

Frequency and Percent for Survey Question 15

Question 15- Which level of program completion are you seeking or have sought in technical education?	Frequency	Percent
Diploma	40	49
All the above	24	30
Associate of Applied Science	11	14
Technical Certificate of Credit	6	7
Total	81	100

Table 27

Frequency and Percent for Survey Question 16

Question 16- If you completed a program of study in technical education, what was your highest level of completion?	Frequency	Percent
Diploma	45	68
Associate of Applied Science	11	17
Technical Certificate of Credit	10	15
Total	66	100

Table 28

Frequency and Percent for Survey Question 17

Question 17- Have or will you continue your education at a four year university or college?	Frequency	Percent
Yes	50	63
No	30	38
Total	80	100

There were two survey questions (19 and 20) that addressed annual income level of study participants, before receiving a technical education credential and after program completion at a technical college. In Question 19, there were a total of 78 responses of which 24 (31%) of the respondents indicated that their annual income level was less than $10k, 17 (22%) between $10k to $20k, 14 (18%) between $21k to $30k, 7 (9%) between $31k to $40k, 10 (13%) between $41k to $50k and 6 (8%) over $50k before receiving a technical education credential. In Question 20, there were a total of 61 responses in which 19 (31%) of respondents indicated that their annual income level was less than $10k, 13 (21%) between $10k to $20k, 7 (11%) between $21k to $30k, 15 (25%) between $31k to $40k, 4 (7%) between $41k to $50k, and 3 (5%) over $50k 6 months after completion of a technical education program (see Table 29 and 30). In addition, 66 respondents answered Question 18: "Did you find gainful employment within 6 months of your program completion?" Responses indicated that 28 (42%) found gainful employment 6 months after their program completion and 38 (58%) reported they did not find gainful employment (see Table 31).

Table 29

Frequency and Percent for Survey Question 19

Question 19- Which of the following best describes your annual income level prior to receiving a technical education credential?	Frequency	Percent
Less than $10k	25	32.05
Between $10k to $20k	16	20.51
Between $21k to $30k	14	18
Between $41k to $50k	10	13
Between $31k to $40k	7	9
Over $50k	6	7.7
Total	78	100

Note. k = thousands.

Table 30

Frequency and Percent for Survey Question 20

Question-20 Which of the following best describes your annual income level six months after completion of a technical education credential?	Frequency	Percent
Less than $10k	19	31.15
Between $31k to $40k	14	23
Between $10k to $20k	13	21.31
Between $21k to $30k	8	13.11
Between $41k to $50k	4	6.56
Over $50k	3	4.92
Total	61	100

Note. k = thousands.

Table 31

Frequency and Percent for Survey Question 18

Question 18- Did you find gainful employment within six months of your program completion?	Frequency	Percent
No	38	58
Yes	28	42
Total	66	100

Data Analysis

Normality

In regards to the archival group, descriptive statistics associated with education level upon entrance, literacy level (COMPASS scores) and completion level of study participants are described in Tables 5, 6 and 7. The statistical software package SPSS version 22 was used to evaluate the archival data for normal distribution. According to Fields (2009), a distribution could be normally distributed, positively skewed or negatively skewed. P-P plots and histograms of the archival data group revealed that sample data for Writing and Reading COMPASS scores were positively skewed, and sample data for Mathematics and Algebra COMPASS scores and program completion and education level were negatively skewed. Skewness statistics were performed and revealed that archival data was not normally distributed (see Table 32).

Table 32

Archival Data Tests of Normality for COMPASS Scores

Factor	Distribution	Skewness
Algebra COMPASS	Negatively	1.641
Mathematics COMPASS	Negatively	1.098
Reading COMPASS	Positively	-1.062
Writing COMPASS	Positively	-.204

According to Fields (2009), data that is not normally distributed suggests that the majority of the scores are not near the center of the distribution. Distribution that has values of skewness above or below zero (0) implies a deviation from normal. These results suggested that data lacked randomness.

In addition, the Kolmogorov-Smirnov and Shapiro-Wilk tests for normality were performed and revealed that values from program completion level and education level for no high school diploma or GED, high school diploma, and GED were found to be significant. Therefore, it appeared that the distribution of data lacked randomness. The values related to the education level of an Associate of Applied Science degree and Bachelor of Science degree-education levels were not found to be significant (see Table 33). Therefore, it appeared that the distribution of data was probably normal. Fields (2009) suggested that a significant value (less than .05) implies a deviation from normality.

Table 33

Archival Data Tests of Normality for Education and Completion Level

Education	Kolmogorov-Smirnov		Shapiro-Wilk		Completion	Kolmogorov-Smirnov		Shapiro-Wilk	
	df	Sig.	df	Sig.		df	Sig.	df	Sig.
*No HS/GED	15	.000	15	.000	*TCC	64	.000	64	.000
*HS	299	.000	299	.000	*Diploma	153	.000	153	.000
*GED	95	.000	95	.000	*AAS	23	.000	23	.000
AAS	6	.200	6	.415	*Fall 2014	97	.000	97	.000
BS	6	.200	6	.804	*No award	84	.000	84	.000

Note. GED = general education diploma; HS = high school diploma; No HS or GED = 11 years of education- no completion; AAS = associate of applied science degree; BS = bachelor of science degree; TCC = technical certificate of credit; significant at the ≤ .05 level *.

The survey group ($N = 82$) was numerically smaller than the archival group ($N = 421$). The statistical software SPSS version 22 was used to evaluate archival data for normal distribution. P-Plots and histograms revealed that survey data group for education level, work status, type of work experience, and prior and after income level were negatively skewed. Therefore, these results suggested that data lacked randomness.

However, survey data in regards to program completion level was normally distributed. The Skewness statistics was performed and revealed that the survey data for education level, work status, type of work experience, and prior and after income level were not normally distributed (see Table 34).

Table 34

Survey Data Tests of Normality

Factor	Distribution	Skewness
Completion	Normal	.004
Work Status	Negatively	.039
Type of Work	Negatively	.208
Education	Negatively	.443
After Income	Negatively	.493
Prior Income	Negatively	.602

In addition, the Kolmogorov-Smirnov and Shapiro-Wilk tests for normality were performed and revealed that values within the education level, work status, type of work experience and prior and after income level were found to be significant and not significant (see Tables 35, 36 and 37). For example, education level such as high school diploma, GED, some college and associate of applied science degree were found to be significant. Therefore, distribution of data lacked randomness. Similar findings were discovered in work status data such as full-time employment, unemployment and full-time and part-time employment; type of work experience such as professional, manufacturing, retail trade and other (service or government); and income level prior to program completion such as less than $10k, $21k-$30k and $41k-$50k. However, work status such as part-time employment and income level prior to program completion such as $10k-$20k and over $50k were found not to be significant. Therefore, the distribution of data was probably normal.

Table 35

Survey Data Test of Normality for Education Level Upon Entrance

Education	Kolmogorov-Smirnov		Shapiro-Wilk	
	df	Sig.	df	Sig.
*HS	20	.000	20	.000
*GED	11	.000	11	.000
*Some College	18	.000	18	.000
*AAS	3	n/a	3	.000
BS	2	n/a	2	n/a

Note. HS = high school; GED = general education diploma; AAS = associate of applied science degree; BS = bachelor of science degree; df = degrees of freedom; Sig. = significant; significant at the ≤ .05 level *.

Table 36

Survey Data Tests of Normality for Work Status and Type of Work Experience

History	Kolmogorov-Smirnov		Shapiro-Wilk		Type	Kolmogorov-Smirnov		Shapiro-Wilk	
	df	Sig.	df	Sig.		df	Sig.	df	Sig.
*FT	21	.000	21	.000	MANF	21	.000	9	.000
*UE	15	.000	15	.212	OTHE	12	.000	12	.000
*FT/PT	11	.001	11	.004	PROF	9	.021	9	.028
PT	6	.200	6	.212	RETR	6	.036	6	.101
					BUSN	3	n/a	3	1.0

Note. FT = full-time employment; PT = part-time employment; UE = unemployed; PROF = professional; MANF = manufacturing; RETR = retail trade; BUSN = business; OTHE = other; df = degrees of freedom; Sig. = significant; significant at the ≤ .05 level *.

Table 37

Survey Data Tests of Normality for Prior and After Income Level

Prior	Kolmogorov-Smirnov		Shapiro-Wilk		After	Kolmogorov-Smirnov		Shapiro-Wilk	
	df	Sig.	df	Sig.		df	Sig.	df	Sig.
*Less $10k	22	.000	22	.000	*Less $10k	18	.000	18	.000
*$41k-$50k	9	.000	9	.000	*$21k-$30k	7	.000	7	.000
*$21k-$30k	8	.012	8	.037	*$10k-$20k	11	.007	11	.008
$10k-$20k	8	.150	8	.093	$31k-$40k	11	.100	11	.018
Over $50k	5	.161	5	.325	$41k-$50k	4	n/a	4	.001

Note. k = thousands; df = degrees of freedom; Sig. = significant; significant at the ≤ .05 level *.

Inferential Analysis

Research Question 1: Does the displaced worker's prior annual income level influence the level of program completion at a technical college?

In Questions 19 and 20 of the survey, respondents answered questions related to their annual income level prior to program completion and after program completion (see Tables 29 and 30). The researcher elected to compare income levels that were less than $10k and income levels that were in the $10 to $20k, $31k to $40k, $41k to $50k and over $50k income level categories prior to program completion, to the level of program completion; in order to show the relationship or non-relationship between the various income levels. Results from the $10k to $20k Levene's test $F(34) = .26$, $p = .62$; $21 to $30k Levene's test $F(31) = .0$, $p = 1$; $31k to $40k Levene's test $F(24) = .19$, $p = .67$; $41k to $50k Levene's test $F(31) = .11$, $p = .74$; and over $50k Levene's test $F(26) = .05$, $p = .82$, indicated that the variance

of the income level of less than $10k and between all other income levels listed in the survey were approximately equal and found to be not significantly different. Therefore, the standard *t* test results were used. There was a statistically significant difference between mean prior annual income level of less than $10k ($N = 23$, $M = .83$, $SD = .49$) and the prior annual income levels of $31k to $40k ($N = 3$, $M = 1.7$, $SD = .58$), $t(24) = -2.75$, $p = .01$, and $41k to $50k ($N = 10$, $M = 1.2$, $SD = .42$), $t(31) = -2.09$, $p = .045$ (see Tables 38 and 39). Cohen's *d* effect size for the $31k to $40k group, ($d = -.1.57$), and $41 to $50k group, (-.81) were large. The researcher can be 95% confident that the valid differences between the means were, $CI = [-1.47, -.21]$ for the $31k to $40k group and $CI = [-.72, -.01]$ for the $41k to $50k group. In addition, results were found not to be a significant difference between prior income level of less than $10k and the prior annual income levels of over $50k ($N = 5$, $M = 1$, $SD = .71$), $t(26) = -.67$, $p = .512$, $10k to$20k ($N = 13$, $M = 1.1$, $SD = .64$), $t(34) = -.1.32$, $p = .196$, and $21k to $30k ($N = 10$, $M = 1.1$, $SD = .57$) $t(31) = -1.406$, $p = 17$. The Cohen's *d* effect size for the over $50k group, (-.28), $10k to $20k group, (-.44), and $21k to$30k group, (-.51) were moderate. The researcher can be 95% confident that the valid difference between the means were, $CI = [-.71, .36]$ for the over $50k group, $CI = [.14, .18]$ for the $10k to $20k group and CI = [-.67, .12] for the $21k to $30k group (see Tables 38 and 39).

Therefore, a worthy observation from the results was that those individuals who had a prior annual income level less than $10k prior to program completion, when compared with those individuals who had a prior annual income level of $31k to $50k had a significant difference in level of program completion. Therefore,

difference in level of program completion showed that 18 (78%) of those individuals, who reported a prior annual income level of less than $10k, earned awards at the technical diploma (74%) or associate of applied science degree level (4%). In the prior annual income levels of $31k to $50k range, 9 out of 13 (69%) students earned awards at the technical diploma level and 4 out of 13 (31%) earned awards at the associate of applied science degree level. Additionally, it appeared that those individuals who had a prior annual income level less than $10k prior to program completion, when compared with those who had a prior annual income level of over $50k and a prior annual income level among the $10k to $30k range had no significant difference in their level of program completion.

Table 38

Mean and Standard Deviation of Annual Income Level Prior and After Program Completion

	Prior				After			
Income Level	*n*	*M*	*(SD)*	95% CI	*n*	*M*	*(SD)*	95% CI
Less than $10k	23	.83	(.49)	[-.74, -.01]	19	.95	.52	[-.23, .62]
$10k to $20k	13	1.1	(.64)	[-.64, .14]	12	.75	.62	[-.23, .62]
$21k to $30k	10	1.10	.57	[-.67, .12]	7	1.3	.49	[-.81, .13]
$31k to $40k	3	.83	.49	[-1.47, -.21]	11	1.2	.75	[-.71, .24]
$41k to $50k	10	1.2	.42	[-.74, -.01]	4	1.3	.50	[-.90, .29]
Over $50k	5	1.0	.71	[-.71, .36]	3	1.0	.00	[-.70, .59]
Total	64				56			

Note. CI = confidence interval; M = mean; SD = standard deviation.

Table 39

Independent t test for Surveyed Prior Annual Income Levels Compared to Less Than $10k Group and Program Completion Level

Income Level	*t*	df	*p*	CI	*d*
Over $50k	-.665	26	.512	[-.712, .364]	-.28
$10k to $20k	-1.318	34	.196	[-.638, .136]	-.44
$21k to $30k	-1.406	31	.170	[-.671, .124]	-.51
$41k to $50k	-2.092	31	.045	[-.738, -.009]	-.81
$31k to $40k	-2.745	24	.011	[-1.43, -.209]	-1.57

Note. df = degrees of freedom; *t* = t statistic; *p* = significant at the ≤ .05 level; *d* = Cohen's *d* effect size.

Results from an one-way ANOVA of group prior annual income level prior to program completion were found to be not significant as related to the difference between groups, in regards to program completion level $F(5, 58) = 1.7$, $p = .150$, $\eta^2 = .128$ (see Table 40). The results from the Levene's test $F(5, 58) = .12$, $p = .99$, indicated that the variance of annual income level prior to program completion and level of program completion was assumed to be approximately equal. In addition, there was 12.8% of the variance in completion level accounted for by the prior income level group. Therefore, it appeared that annual income level prior to program completion was unlikely to predict participants' level of program completion. However, since the number of cases was very small in the over $50k income group compared to the less than $10k income group, value of the ANOVA analysis is limited.

Table 40

One-way ANOVA for Surveyed Prior to Program Completion Annual Income Levels

df_1	df_2	F	*p*	n^2
5	58	1.696	.150	.128

Note. df = degrees of freedom; F = F statistic; *p* = significant at the < .05 level; n^2= partial eta squared.

In an effort to better understand the nature of differences between the five prior annual income level means, five Tukey's HSD post-hoc tests preceded the ANOVA test and results were found to be not significant (Fields, 2009). As displayed in Table 41, the results from comparisons were found to be not significant as related to the difference between the means and were linked with small to large effect sizes, in accordance to Cohen's (1962) guidelines. Therefore, it appeared that program completion level was unlikely influenced by student's annual income level prior to program completion.

Table 41

Prior Annual Income Level Results Associated with Tukey's HSD

Comparison			*p*	*d*
Less than 10k	⟷	10k to 20k	.773	-.44
		21k to 30k	.773	-.51
		31k to 40k	.141	-1.57
		41k to 50k	.472	-.81
		Over 50k	.987	-.41
10k to 20k	⟷	21k to 30k	1.00	-.03
		31k to 40k	.549	-.98
		41k to 50k	.995	-.22
		Over 50k	1.00	.16
21k to 30k	⟷	31k to 40k	.620	-.99
		41k to 50k	.998	-.20
		Over 50k	.999	.22
31k to 40k	⟷	41k to 50k	.787	.93
		Over 50k	.559	1.44
41k to 50k	⟷	Over 50k	.985	.54

Note. k = thousands; *d* = Cohen's *d*.

Research Question 2: Does the displaced worker's education level upon entrance influence the level of program completion at a technical college?

Archival

An independent *t* test and an analysis of variance (ANOVA) were conducted to determine if there were statistically significant differences between mean education level of displaced workers and their program completion level at a technical college. The researcher elected to only discuss mean differences of high school diplomas and GEDs received among study participants, due to the high frequency count recorded in each group (see Table 42). Results from the Levene's test $F(392) = .63$, $p = .427$, indicated that the variance of the high school and GED population were assumed to be approximately equal. Therefore, the standard *t* test results were used.

Results were found to be not significant as related to the difference between the mean education level of a high school diploma ($N = 299$, $M = 1.94$, $SD = 1.39$), and GED students ($N = 95$, $M = 2.1$, $SD = 1.42$), $t(392) = -.794$, $p = .428$ (see Tables 42 and 43). Therefore, it appeared that the education level of a high school diploma or its equivalent upon entrance to the college had no significant effect on the displaced worker's level of program completion. Cohen's *d* effect size, ($d = -.09$) was very small. The researcher can be 95% confident that the valid differences between the means were, $CI = [-.45, .19]$.

Table 42

Mean and Standard Deviation of Education Level Upon Entrance

Education Level	*N*	*M*	*(SD)*
GED	95	2.1	(1.41)
HS	299	1.94	(1.39)
No HS or GED	15	1.53	(1.96)
AAS	6	2.33	(1.21)
BS	6	1.83	(1.47)
Total	421	1.96	(1.42)

Note. GED = general education diploma; HS = high school diploma; No HS or GED = 11 years of education- no completion; AAS = associate of applied science degree; BS = bachelor of science degree.

Table 43

Independent t test for Education Level- High School Diploma and GED

t	df	*p*	95% CI
-.794	392	.428	[-.454, .193]

Note. t = t statistic; df = degrees of freedom; p = significant at the ≤ .05 level; CI = confidence interval.

A one-way ANOVA for group education level upon entrance was found to be not significant in the difference between groups, as related to program completion level $F(4, 416) = .618$, $p = .650$, $\eta^2 = .006$ (see Table 44). Given that results did not show a significant difference as related to program completion level, it appeared that education level upon entrance to the college was unlikely to influence the displaced workers' program completion level. The assumption of homogeneity of variances was tested and found unequal variances using Levene's Test $F(4, 416) = 4.36$, $p \leq .05$.

Since the Levene's test was significant, the results from Welch Robust test $F(4, 17.29) = .44$, $p = .780$, were found to be not significant as related to the mean difference among participants in the education group, in regards to their level of program completion. In addition, there was .6% of the variance in completion level accounted for by the education level group.

Table 44

One-way ANOVA for Education Level- High School Diploma and GED

df_1	df_2	F	*p*	n^2
4	416	.618	.650	.006

Note. df = degrees of freedom; F = F statistic; *p* = significant at the ≤ .05 level; n^2= partial eta squared.

In an effort to further investigate differences between the five means, Tukey's HSD post-hoc tests preceded the ANOVA test which was found to be not significant (Fields, 2009). As shown in Table 45, the results from all five comparisons were found to be not significant as related to the differences between, and the means were not linked with small to moderate effect sizes centered on Cohen's (1962) guidelines. Therefore, it appeared that program completion level was not significantly affected by the group's education level upon entrance to the college.

Table 45

Education Level Upon Entrance Results Associated with Tukey's HSD Multiple Comparison

Comparison			*p*	*d*
GED	⟷	HS	.936	.09
		No HS/GED	.646	.32
		AAS	.993	-.20
		BS	.994	.17
HS	⟷	No HS/GED	.811	.24
		AAS	.963	-.30
		BS	1.00	.08
No HS/GED	⟷	AAS	.770	-.49
		BS	.992	-.17
AAS	⟷	BS	.973	.37

Note. HS = high school diploma; GED = general education diploma; AAS = associate of applied science degree; BS = bachelor of science degree; *d* = Cohen's *d;** = significant at the 0.05 level.

Survey

An independent *t* test and analysis of variance (ANOVA) were conducted on the archival and survey group to determine if there were statistically significant differences between the mean education level of a high school diploma and general education diploma, for those who received a credential from a technical program. In regards to the survey group, descriptive statistics associated with the education level upon entrance, prior annual income level, current work status and experience and completion level of study participants are described in Tables 22, 23, 24, 27, 29 and 30. The results of Levene's test $F(36) = 2.93$, $p = .10$, indicated that the variance of high school and GED populations and high school and some college population, $F(43) = .81$, $p = .37$, were approximately equal and not significantly different. Therefore, standard *t* test results were used.

Test results from the independent *t* test were found to be not significant as related to the difference between the mean education level of high school students (*N* = 22, *M* = .95, *SD* = .49), and GED students (*N* = 16, *M* = .75, *SD* = .58), *t*(36) = 1.184, *p* = .244 (see Tables 46 and 47). The Cohen's d effect size, (*d* = .37) was very small. The researcher can be 95% confident that the valid differences between the means were, *CI* = [-.15, .56]. In addition, the test results from the independent *t* test were found to be not significant as related to the difference between the education level of high school students (*N* = 22, *M* = .95, *SD* = .49), and some college students (N = 23, M = 1.2, SD = .49), *t*(43) = -1.506, *p* = .139 (see Tables 46 and 47). The Cohen's d effect size, (*d* = -0.45) was very small. The researcher can be 95% confident that the valid differences between the means were, *CI* = [-.51, .07]. Therefore, it appeared that the educational level upon entrance of the survey group such as high school diploma, GED and some college (see Table 48) were unlikely to influence level of program completion of study participants.

Table 46

Education Level Upon Entrance of Surveyed Displaced Workers

Education Level	*n*	*M*	*(SD)*	95% CI
High School	22	.95	(.49)	[-.15, .56]
GED	16	.75	(.58)	[-.15, .56]
Some College	23	1.17	(.49)	[-.513, .074]
AAS or AS	3	1.7	(.58)	[-1.24, -.08]
BS	2	1.4	(1.4)	[-.91, .82]

Note. M = mean average; SD = standard deviation; CI = confidence interval.

Table 47

Independent t Test for Surveyed Education Level Upon Entrance- High School Diploma and GED

t	df	*p*	95% CI	*d*
1.184	36	.244	[-.146, .555]	.37

Note. df = degrees of freedom; *t* = t statistic; *p* = significant at the ≤ .05 level; *d* = Cohen's *d* effect size.

Table 48

Independent t Test for Surveyed Education Level Upon Entrance- High School Diploma and Some College

t	df	*p*	*95%*	*d*
-1.506	43	1.39	[-.513, .074]	-0.45

Note. df = degrees of freedom; *t* = t statistic; *p* = significant at the ≤ .05 level; *d* = Cohen's *d* effect size.

A one-way ANOVA of group education level upon entrance yielded results that indicated a significant difference between groups, in regards to program

completion level $F(4, 61) = 2.6$, $p = .045$, $\eta^2 = .146$ (see Table 49). Therefore, difference in level of program completion showed that 5 (22%) of those students, who reported to have some college education but no award, earned higher levels of completion (AAS degree) than those at the GED, 1 (6%), and high school diploma, 2 (9%) level. In addition, 17 out of 23 (74%) students with some college education but no award received awards at the technical diploma level; 17 out of 22 (77%) students with a high school diploma education received awards at the technical diploma level; and 10 out 16 (63%) students with a GED education received awards at the technical diploma level. Hence, the technical diploma level was the most frequent award achieved by students with a GED, high school diploma, or some college education but no award educational level.

Table 49

One-way ANOVA for Surveyed Education Level Upon Entrance- High School Diploma and GED

df_1	df_2	F	*p*	n^2
4	61	2.603	.045	.146

Note. df = degrees of freedom; F = F statistic; *p* = significant at the ≤ .05 level; n^2= partial eta squared.

The assumption of homogeneity of variances was tested and found unequal variances using Levene's Test $F(4, 61) = 2.55$, $p \leq .05$. Since the Levene's test was significant, results from the Welch Robust test $F(4, 5.21) = 1.79$, $p = .263$, were found to be not significant as related to the mean difference among participants in the education group, in regards to their level of program completion. In addition, there was 14.6% of the variance in completion level accounted for by the education level group.

Results indicated that the variance level between high school and GED students were stable. Therefore, it appeared that educational level upon entrance for the survey group was likely to influence the level of program completion for participants.

In an effort to provide further investigation into the nature of differences between the five means, five Tukey's HSD post-hoc tests preceded the ANOVA test and results were found to be not significant (Fields, 2009). As shown in Table 50, results from all five comparisons were found to be not significant as related to the differences between the means were not linked with small to large effect sizes centered on Cohen's (1962) guidelines. Therefore, it appeared that program completion level was not significantly affected by the group's education level upon entrance to the college.

Table 50

Education Level Upon Entrance Results Associated with Tukey's HSD Multiple Comparison

Comparison			*p*	*d*
HS	⟷	GED	.780	.38
		Some College	.657	-.45
		AAS	.219	-1.35
		BS	1.00	-.05
GED	⟷	Some College	1.29	-.78
		AAS	.068	-1.59
		BS	.972	-.23
Some College	⟷	AAS	.579	-.93
		BS	.992	.16
AAS	⟷	BS	.663	.62

Note. HS = high school diploma; GED = general education diploma; AAS = associate of applied science degree; BS = bachelor of science degree; *d* = Cohen's *d; p* = significant at the ≤ .05 level *.

Research Question 3: Does the displaced worker's literacy level influence the level of program completion at a technical college?

In regards to literacy level as measured by COMPASS scores, the researcher reported the mean difference of Reading and Writing COMPASS scores with the mean technical certificate of credit (TCC) and technical diploma level of completion due to the large number of cases in each subset. The researcher reported the mean difference of Mathematics and Algebra COMPASS scores with the mean technical diploma and associate of applied science degree due to literature support of students being unprepared for college in these areas (CollegeBoard, 2013). There were 70 (16.6%) of study participants who transferred grades into the college, in lieu of taking the COMPASS admission exam (see Table 6). Those students who transferred grades

into the college for admission purposes were not included in the literacy level calculation.

Table 51

Completion Level Compared to Reading COMPASS Mean Scores

Completion level	*n*	*M*	*(SD)*
TCC	55	77.38	(13.87)
Diploma	137	77.31	(12.63)
Total	192		

Note. TCC = Technical Certificate of Credit; M = mean; SD = standard deviation.

Table 52

Completion Level Compared to Writing COMPASS Mean Scores

Completion level	*n*	*M*	*(SD)*
TCC	55	56.76	(26.25)
Diploma	137	55.5	(25.16)
Total	192		

Note. TCC = Technical Certificate of Credit; M = mean; SD = standard deviation.

Table 53

Independent t test for TCC and Technical Diploma Completion Level Compared to Reading and Writing Literacy Level as Measured by COMPASS Scores

Reading	*t*	df	*p*	CI	*d*
	.03	190	.068	[-4.022, 4.158]	.01
Writing	*t*	df	*p*	CI	*d*
	.30	190	.764	[-6.797, 9.244]	.71

Note. df = degrees of freedom; t = t statistic; p = significant at the ≤ .05 level; *d* = Cohen's *d* effect size.

Results from the Reading COMPASS scores Levene's test $F(190) = .17$, $p = .682$, indicated that the variance of TCC and technical diploma level completers was approximately equal. Therefore, standard *t* test results were used. The test results were found to be not significant as related to the difference between the mean TCC level completers ($N = 55$, $M = 77.4$, $SD = 13.9$), and technical diploma completers ($N = 137$, $M = 77$, $SD = 12.6$), $t(190) = .03$, $p = .068$ (see Tables 51 and 53). Cohen's *d* effect size ($d = .01$) was very small. The researcher can be 95% confident that the valid differences between the means were, $CI = [-4.02, 9.24]$. In addition, results from the Writing COMPASS scores Levene's test $F(190) = .31$, $p = .581$, indicated that the variance of TCC and technical diploma level completers was assumed to be approximately equal. Therefore, standard *t* test results were used. Test results were found to be not significant as related to the difference between the mean TCC level completers ($N = 55$, $M = 56.76$, $SD = 26.25$), and technical diploma completers ($N = 137$, $M = 55.54$, $SD = 25.16$), $t(190) = .30$, $p = .764$ (see Tables 52 and 53). Cohen's *d* effect size ($d = .07$) was large. The researcher can be 95% confident that the

differences between the means were, *C*I = [-6.8, 9.2]. Therefore, it appeared that the Reading and Writing literacy level, as measured COMPASS scores, were unlikely predict the displaced workers' program completion at the technical certificate of credit and technical diploma level.

Table 54

Completion Level Compared to Mathematics COMPASS Mean Scores

Completion level	*n*	*M*	*(SD)*
Diploma	135	38.79	(15.29)
AAS	18	55.72	(55.72)
Total	153		

Note. AAS = associate of applied science degree; M = mean; SD = standard deviation.

Table 55

Completion Level Compared to Algebra COMPASS Mean Scores

Completion level	*n*	*M*	*(SD)*
Diploma	81	29.56	(16.48)
AAS	20	49.90	(16.94)
Total	101		

Note. AAS = associate of applied science degree; M = mean; SD = standard deviation.

Table 56

Independent t test for AAS and Technical Diploma Completion Level Compared to Mathematics and Algebra Literacy Level as Measured by COMPASS Scores

Mathematics	*t*	df	*p*	CI	*d*
	-3.1	19.165	.006	[5.444, -28.325]	-.88
Algebra	*t*	df	*p*	CI	*d*
	-4.92	99	.000	[4.137, -28.554]	-1.22

Note. AAS – associate of applied science degree; df = degrees of freedom; t = t statistic; p = significant at the ≤ .05 level; d = Cohen's d effect size.

Results from Mathematics COMPASS scores Levene's test $F(151) = 7.52$, $p = .007$, indicated that the assumption of homogeneity of variances had been violated. Therefore, standard t test results were not used due to equal variances could not be assumed. Results were found to be significant as related to the difference between the mean technical diploma completers ($N = 135$, $M = 38.79$, $SD = 15.29$), and associate of applied science degree completers ($N = 18$, $M = 55.72$, $SD = 22.41$), $t(19.165) = -3.1$, $p = .006$ (see Tables 54 and 56). Cohen's d effect size ($d = -.88$) was large. The researcher can be 95% confident that the differences between the means were, *C*I = [5.444, -28.325]. In addition, the results from the Algebra COMPASS Levene's test $F(99) = .479$, $p = .491$, indicated that the variance of technical diploma and associate of applied science degree completers was assumed to be approximately equal. Therefore, standard t test results were used. Results were found to be significant as related to the difference between the mean technical diploma completers ($N = 81$, $M = 29.56$, $SD = 16.48$), and associate of applied science degree completers ($N = 20$, $M = 49.9$, $SD = 3.79$), $t(99) = -4.92$, $p = .000$ (see Tables 55 and 56). Cohen's d effect size

(d = -1.22) was very large. The researcher can be 95% confident that the valid differences between the means were, CI = [4.137, -28.554]. Therefore, it appeared that the Mathematics and Algebra literacy level, as measured COMPASS scores, were likely to predict the displaced workers' program completion at the technical diploma and associate of applied science degree level.

A one-way ANOVA analysis of the groups Reading and Writing literacy levels, as measured by COMPASS scores, was conducted. The assumption of homogeneity of variances was tested and found equal variances using Levene's Test $F(4, 357) = .07$, $p = .991$. One-way ANOVA results for Reading literacy level yielded a significant difference between groups, in regards to program completion level $F(4, 357) = 2.51$, $p = .042$, $\eta^2 = .146$ (see Table 57). There was 14.6% of the variance in completion level accounted for by the reading literacy level group. In regards to the Writing literacy level, the assumption of homogeneity of variances was tested and found equal variances using Levene's Test $F(4, 353) = 2.29$, $p = .059$. Writing literacy level, using COMPASS scores, yielded a significant difference between groups, in regards to program completion level $F(4, 353) = 5.03$, $p = .001$, $\eta^2 = .192$ (see Table 57). There was 19.2% of the variance in completion level accounted for by the writing literacy level group. Therefore, it appeared that overall Reading and Writing literacy levels of displaced workers' were likely to influence their level of program completion.

Additionally, a one-way ANOVA analysis of the groups Mathematics and Algebra literacy level, as measured by COMPASS scores, were conducted. The assumption of homogeneity of variances was tested and found unequal variances

using Levene's Test $F(4, 352) = 3.22$, $p = .013$. Therefore, the Welch Robust test $F(4, 89.39) = 3.05$, $p = .021$, indicated a significant mean difference among the participants in the mathematics literacy group, in regards to level of program completion. Mathematics literacy level, using COMPASS scores, yielded a significant difference between groups, in regards to program completion level $F(4, 352) = 4.66$, $p = .001$, $\eta^2 = .184$ (see Table 57). There was 18.4% of the variance in completion level accounted for by the mathematics literacy level group. In regards to the algebra literacy level, the assumption of homogeneity of variances was tested and found unequal variances using Levene's Test $F(4, 223) = 2.99$, $p = .020$. Therefore, the Welch Robust test $F(4, 77.41) = 10.82$, $p \leq .05$, indicated a significant difference mean difference among the participants in the algebra literacy group, in regards to level of program completion. Algebra literacy level, using COMPASS scores, yielded a significant difference between groups, in regards to program completion level $F(4, 223) = 12.92$, $p = .000$, $\eta 2 = .142$ (see Table 57). There was 14.2% of the variance in completion level accounted for by the algebra literacy level group. As a result of the findings, it appeared that Reading, Writing, Mathematics and Algebra literacy levels, as measured by COMPASS scores, were likely to influence the program completion level of the study participants. Taken with the *t* test results, it appeared the influence in program completion level was linked to the displaced workers' quantitative literacy level (Mathematics and Algebra).

Table 57

One-way ANOVA for Literacy Levels as Measured by COMPASS Scores

	df_1	df_2	F	*p*	n^2
*Reading	4	357	2.512	.042	.146
*Writing	4	353	5.027	.001	.192
*Mathematics	4	352	4.659	.001	.184
*Algebra	4	223	12.917	.000	.142

Note. df = degrees of freedom; F = F statistic; p = significant at the ≤ .05 level *; n^2= partial eta squared.

Research Question 4: Does the displaced current worker's work status and experience influence the level of program completion at a technical college?

In Questions 9 and 12 of the survey, respondents answered items related to the type of work experience (agricultural, business, manufacturing, professional, retail trade, wholesale trade, and other- service or government) and employment status (full-time, part-time, seasonal, unemployed, and full-time/part-time) they had in the last five years. The researcher elected to compare manufacturing with other (service or government) and professional work experience, and full-time employment status with full-time/part-time and unemployed work status by program completion level, due to the quantity of responses in each category (see Table 58). In addition, the researcher compared full-time/part-time employment with unemployed work status due these groups having similar quantity of responses (see Table 58).

Table 58

Type of Work Experience and Current Work Status of Surveyed Participants in the Past 5 Years

	Type of Work					Work Status			
Type	*n*	*M*	*(SD)*	95% CI	History	*n*	*M*	*(SD)*	95% CI
Manufacturing	21	.90	(.63)	[-.53, .22]	FT	24	1.17	(.10)	[-.51, .51]
Other	16	1.06	(.63)	[-.22, .53]	UE	17	.71	(.47)	[.16, .77]
Professional	11	1.2	(.60)	[-.75, .19]	FT/PT	14	1.21	(.58)	[-.40, .31]
Retail trade	7	1.0	(.58)	[-.79, .43]	PT	6	1.2	(.75)	[-.51, .51]
Business	6	1.2	(.44)	[-.64, .43]	Seasonal	2	.50	(.71)	[-.08, 1.42]
Agricultural	3	1.0	(.01)	[-.96, .60]					
Wholesale trade	1	n/a	n/a	n/a					
Total	65	1.03	.56		Total	63	1.03	.56	

Note. Other = service or government; CI = confidence interval; FT = full-time; PT = part-time; UE = unemployed; FT/PT = full-time and part-time.

The examination of equal variance between the means of types of work experience (manufacturing and other-service or government), revealed that Levene's test $F(35) = 2.05$, $p = .16$, and manufacturing and professional Levene's test $F(30) = .01$, $p = .92$, indicated that the variance of the manufacturing, other (service or

government) and professional population were approximately equal and were found to be not a significant difference. Therefore, standard *t* test results were used. The results were found to be not significant, as related to the difference between the mean type of work experience of manufacturing ($N = 21$, $M = .90$, $SD = .63$), other (service or government) ($N = 16$, $M = 1.06$, $SD = .44$), $t(35) = .858$, $p = .397$, and professional ($N = 11$, $M = 1.2$, $SD = .60$), $t(30) = 1.205$, $p = .238$ (see Tables 58 and 59). Cohen's *d* effect size for the other group, ($d = .29$) was small and Cohen's d effect size for the professional group, ($d = .46$) was moderate. The researcher can be 95% confident that the valid differences between the means were, $CI = [-.22, .53]$ for the other group and $CI = [-.19, .75]$, and $CI = [-.19, .75]$ for the professional group (see Table 49). Therefore, it appeared that the type of work experiences such as manufacturing, service or government and professional were unlikely to influence or predict level of program completion.

Table 59

Independent t test for Surveyed Type of Work Experience and Current Work Status

	Type of Work						Work Status				
Type	*t*	*df*	*p*	95% CI	*d*	History	*t*	*df*	*p*	95% CI	*d*
Other	.858	35	.397	[-.216, .531]	.3	FT/PT	-.273	36	.786	[-.401, .306]	-.01
Prof.	1.205	30	.238	[-.192, .747]	.46	FT/UE	3.049	39	.004	[-.155, .766]	.97

Note. t = t statistic; df = degrees of freedom; *p* = significant at the ≤ .05 level; Other = service or government; Prof. = professional; CI = confidence interval; *d* = Cohen's *d* effect size; UE = unemployed; FT/PT = full-time and part-time.

In addition, the researcher examined equal variance between the means of full-time work status with full-time/part-time and unemployed. The results of the full-time/part-time group Levene's test $F(36) = .83$, $p = .37$, and unemployed group Levene's test $F(39) = .59$, $p = .45$, indicated that the variance of full-time and full-time/part-time and unemployed work status populations were approximately equal and found not to be significant different. Therefore, the standard *t* test results were used. Results were found to be not statistically significant, as related to the difference mean work status of full-time employment ($N = 24$, $M = 1.2$, $SD = .10$), and full-time/part-time employment ($N = 14$, $M = 1.2$, $SD = .58$), $t(36) = -.27$, $p = .786$. The Cohen's *d* effect size, ($d = 0$) was very small. The researcher can be 95% confident that the valid differences between means were, $CI = [-.40, .31]$. However, results were found to be statistically significant, as related to the difference between mean work status of full-time employment and unemployed status ($N = 17$, $M = .71$, $SD = .47$), $t(39) = 3.05$, $p = .004$. Cohen's d effect size, ($d = .97$) was very large. The researcher can be 95% confident that the valid differences between means were, $CI = [-.16, .77]$ (see Table 59). Therefore, it appeared that current work status such as full-time and full-time/part-time employment were unlikely to influence the level of program completion. However, it appeared that a current unemployed work status compared to full-time work status was likely to influence the level program completion by participants. The nature of the difference in level of program completion showed that those students, who reported an unemployed work status, completed at a significantly lower program completion level than those who reported full-time and full-time/part-time employment. There were 9 out of 38 (24%) students, who reported their work

status as full-time and full-time/part-time, that earned an associate of applied science degree, and those who were unemployed only received awards at the technical certificate of credit and technical diploma level. It is interesting to note that the technical diploma level was the most frequently award achieved by students who had a full-time, full-time/part-time or unemployed current work status.

Results from an one-way ANOVA of group type of work experience was found to be not significant, in regards to program completion level $F(5, 58) = .44$, $p = .822$, $\eta^2 = .036$ (see Table 60). Results from Levene's test $F(5, 58) = 1.3$, $p = .279$, indicated that the variance of type of work and program completion level was assumed to be approximately equal. In addition, 3.6% of the variance in program completion level was accounted for by the type of work performed by participants.

An one-way ANOVA of work status yielded a significant difference between groups, in regards to program completion level $F(4, 58) = 2.96$, $p > .05$, $\eta^2 = .170$ (see Table 60). Results from Levene's test $F(4, 58) = .68$, $p = .61$, indicated that variance of work status and program completion level are assumed to be approximately equal. There was 17% of the variance in program completion level accounted for by the work status (full-time, part-time, seasonal, or full and part-time) of participants. Therefore, it appeared that the type of work experience of participants was unlikely to predict their level of program completion; however, work status appeared to likely influence the participants' program completion level. Taken with the independent *t* test results, it appears the influence in completion level was between full-time and unemployed work status.

Table 60

One-way ANOVA for Surveyed Current Work Status and Type of Work Experience

	df_1	df_2	F	*p*	n^2
Work Status	4	58	2.964	.027	.170
Work Experience	5	58	.435	.822	.036

Note. df = degrees of freedom; F = F statistic; *p* = significant at the < .05 level; n^2= partial eta squared.

In an effort to better understand the nature of differences between the seven types of work means, seven Tukey's HSD post-hoc tests preceded the ANOVA test which was found to be not significant (Fields, 2009). As displayed in Table 61, each comparison was found to be not significant as the difference between means was linked with only small to moderate effect sizes, in accordance to Cohen's (1962) guidelines. In addition, the statistically significant ANOVA for work status or history was succeeded with five Tukey's HSD post-hoc tests (Fields, 2009), in which results from each comparison showed no significant difference between the work status means and were linked with only small to large effect sizes centered on Cohen's (1962) guidelines (see Table 62). Therefore, it appeared that program completion was not significantly affected by the type of work students had experienced; however, whether the students had worked full-time, part-time, seasonal, unemployed, or both full and part-time appeared to have had a significant effect on the student's level of program completion.

Table 61

Type of Work Results Associated with Tukey's HSD

Comparison			*p*	*d*
AGRI	↔	PROF	.997	-.42
		MANF	1.00	.23
		RETR	1.00	0
		OTHE	1.00	-.19
		BUSN	.998	-.32
PROF	↔	MANF	.787	.46
		RETR	.986	.31
		OTHE	.995	.23
		BUSN	1.00	.02
MANF	↔	RETR	.999	-.17
		OTHE	.962	-.30
		BUSN	.992	-.39
RETR	↔	OTHE	1.00	-.12
		BUSN	.995	-.25
OTHE	↔	BUSN	.999	-.18

Note. AGRI = agricultural; PROF = professional; MANF = manufacturing; RETR = retail trade; BUSN = business; OTHE = other; *d* = Cohen's *d*.

Table 62

Current Work Status Results Associated with Tukey's HSD

Comparison			*p*	*d*
FT	↔	PT	1.00	0
		Seasonal	.445	1.11
		UE	.063	.97
		FT/PT	.999	-.08
PT	↔	Seasonal	.549	.92
		UE	.374	.73
		FT/PT	1.00	-.06
Seasonal	↔	UE	.985	-.35
		FT/PT	.401	-1.1
UE	↔	FT/PT	.077	-.95

Note. FT = full-time; PT = part-time; UE = unemployed; FT/PT = full and part-time; *d* = Cohen's *d*.

Summary

In summary, 421 students, who were identified as displaced workers at Albany Technical College during the Fall 2009 through Summer 2014 academic terms, were included in this study. A response rate of 50.3% resulted in the survey portion of the study, which consisted of 163 self-selected participants. Data gathered and analyzed were used to investigate the possible influence that attributes of a displaced worker might have had on level of program completion at a technical college. Findings for the four research questions are:

Data gathered in the survey phase of the study was used to answer research Question 1 which stated "Does the displaced worker's prior annual income level influence the level of program completion at a technical college?" Results from the analysis of the survey data revealed that there was a statistically significant difference between mean prior annual income level of less than $10k ($N = 23$, $M = .83$, $SD = .49$) and prior annual income levels of $31k to $40k ($N = 3$, $M = 1.7$, $SD = .58$), $t(24) = -2.75$, $p = .011$, and $41k to $50k ($N = 10$, $M = 1.2$, $SD = .42$), $t(31) = -2.09$, $p = .045$. It appeared that those students who had a prior annual income of less than $10k and those among the $31k to $50k range were more likely to complete at the technical diploma and associate of applied science degree level. However, results from the analysis of the survey data revealed that there was not a significant difference between prior annual income level of less than $10k and prior annual income levels of over $50k ($N = 5$, $M = 1$, $SD = .71$), $t(26) = -.665$, $p = .512$, $10k to$20k ($N = 13$, $M = 1.1$, $SD = .64$), $t(34) = -.1.32$, $p = .196$, and $21k to $30k ($N = 10$, $M = 1.1$, $SD = .57$) $t(31) = -1.406$, $p = 17$. In addition, a one-way ANOVA statistically analysis of survey data revealed that group annual income level prior to program completion yielded to be not a significant difference between groups, in regards to program completion level $F(5, 58) = 1.7$, $p = .150$, $\eta^2 = .128$. Overall, it appears that prior annual income level was unlikely to predict the displaced workers' level of completion. However, there appeared to be a level of influence on program completion level for those students who had a prior annual income level of less than $10k and among the $30k to$50k range.

"Does the displaced worker's education level upon entrance influence the level of program completion at a technical college?" To answer Research Question 2, data from the archival and survey group were analyzed. The results from the archival group found no significant difference between the mean education level of a high school diploma ($N = 299$, $M = 1.94$, $SD = 1.39$), and GED students ($N = 95$, $M = 2.1$, $SD = 1.42$), $t(392) = -.79$, $p = .428$. Additionally, the results from the one-way ANOVA of group education level upon entrance were found to be not significant as related to the difference between groups, in regards to program completion level $F(4, 416) = .62$, $p = .650$, $\eta^2 = .006$. Results from the survey group found no significant difference between the mean education of high school students ($N = 22$, $M = .95$, $SD = .49$), and GED students ($N = 16$, $M = .75$, $SD = .58$), $t(36) = 1.2$, $p = .24$, $d = .37$, and the test results from the independent t test were found to be not significant as related to the difference between the education level of high school students ($N = 22$, $M = .95$, $SD = .49$), and some college students ($N = 23$, $M = 1.2$, $SD = .49$), $t(43) = -1.51$, $p = .14$. However, a one-way ANOVA statistically analysis revealed that the group education level upon entrance yielded a significant difference between groups, in regards to program completion level $F(4, 61) = 2.6$, $p = .045$, $\eta^2 = .146$. Those students, who reported to have some college education but no award, earned higher levels of completion (AAS degree) than those at the GED and high school diploma level. The technical diploma was the most frequent award achieved by students with the educational level of GED, high school diploma and some college education upon entrance to the college.

"Does the displaced worker's literacy level influence the level of program completion at a technical college?" Archival data were analyzed to answer Research Question 3. Results from the archival Reading group data analysis found to be not a significant difference between the mean technical certificate of credit (TCC) level completers ($N = 55$, $M = 77.4$, $SD = 13.87$), and technical diploma completers ($N = 137$, $M = 77.31$, $SD = 12.63$), $t(190) = .03$, $p = .974$; and the results from the archival Writing group data analysis was found to be not a significant difference between the mean TCC level completers ($N = 55$, $M = 56.76$, $SD = 26.25$), and technical diploma completers ($N = 137$, $M = 55.54$, $SD = 25.16$), $t(190) = .30$, $p = .764$. Additionally, the results from the archival Mathematics group data analysis were found to be significant as related to the difference between the mean technical diploma completers ($N = 135$, $M = 38.79$, $SD = 15.29$), and associate of applied science degree completers ($N = 18$, $M = 55.72$, $SD = 22.41$), $t(19.165) = -3.1$, $p = .006$; and the results from Algebra group data analysis results were found to be significant as related to the difference between the mean technical diploma completers ($N = 81$, $M = 29.56$, $SD = 16.48$), and associate of applied science degree completers ($N = 20$, $M = 49.9$, $SD = 3.79$), $t(99) = -4.92$, $p = .000$. However, a one-way ANOVA statistically analysis of the four COMPASS test means of Reading, Writing, Mathematics and Algebra yielded a significant difference between groups, in regards to program completion level: Reading literacy $F(4, 357) = 2.51$, $p = .042$, $\eta^2 = .15$; writing literacy level $F(4, 353) = 5.03$, $p = .001$, $\eta^2 = .19$; Mathematics literacy level $F(4, 352) = 4.66$, $p = .001$, $\eta^2 = .18$; and Algebra literacy level $F(4, 223) = 12.92$, $p = .000$, $\eta 2 = .14$. As a result of the findings, it appeared that the Reading, Writing,

Mathematics and Algebra literacy levels, as measured by COMPASS scores, were likely to predict the program completion level of the study participants. Taken with the *t* test results, it appeared program completion level was linked to the displaced workers' quantitative literacy level (Mathematics and Algebra).

"Does the displaced worker's current work status and experience influence the level of program completion at a technical college?" Survey data were analyzed to answer Research Question 4. The results from the survey found no significant difference between the mean work experience of manufacturing ($N = 21$, $M = .90$, $SD = .63$), and other (service or government) ($N = 16$, $M = 1.06$, $SD = .44$), $t(35) = .86$, $p = .397$, $d = .29$. In addition, results were found to be not significant difference between the mean current work status of full-time work ($N = 24$, $M = 1.2$, $SD = .10$), and full-time/part-time work ($N = 14$, $M = 1.2$, $SD = .58$), $t(36) = -.27$, $p = .786$. Further, a one-way ANOVA statistical analysis revealed that the group type of work yielded no significant difference between groups, in regards to program completion level $F(5, 58) = .44$, $p = .822$, $\eta^2 = .036$. However, the current work status group yielded a significant difference between groups, in regards to program completion level $F(4, 58) = 2.96$, $p > .05$, $\eta^2 = .170$. Those students who reported an unemployed work status, completed at a significantly lower program completion level (i.e., TCC and technical diploma) than those who reported full-time and full-time/part-time employment (i.e., AAS degree). The majority of awards received by students who had full-time, full-time/part-time employment and unemployed status were at the technical diploma level.

Chapter V

DISCUSSION

The purpose of this research study was to determine if the attributes of displaced workers predicted level of program completion at Albany Technical College. The study was centered around four research questions: (1) Does the displaced worker's prior annual income level influence the level of program completion at a technical college; (2) Does the displaced worker's education level upon entrance influence the level of program completion at a technical college; (3) Does the displaced worker's literacy (COMPASS scores) level influence the level of program completion at a technical college; and (4) Does the displaced worker's current work status and experience influence the level of program completion at a technical college? This chapter presents the conclusions of the study, recommendations for practice, recommendations for further research, and the final significance of the study.

The population of the study consisted of 421graduates and students of Albany Technical College, who were identified as displaced workers by the college's admission and financial aid offices during the Fall 2009 through Summer 2014 academic terms. The researcher used archival data to evaluate the education and literacy (COMPASS scores) level, and responses from the survey portion of the study to evaluate the education level upon entrance to the college, prior annual income level and current work status and experience of the participants. The researcher self-selected 163 out of the 421 study participants to include in the survey phase of the study. The researcher used the internet platform, Abode Form Central, to gather

survey responses which were distributed through electronic mail. The survey request and three follow-up e-mail reminders resulted in (N = 82) a 50.3% return rate. Data gathered from the College's admission and financial offices and survey responses were analyzed by the researcher with the statistical software, Statistical Package for Social Sciences (SPSS) version 22.

Program completion levels such as technical certificate of credit, technical diploma, and associate of applied science degree, differed in admission requirements, program length, and content rigor. For example, technical certificate of credits (TCCs) had an admission requirement for COMPASS scores in mathematics (17), reading (46), and writing (15); and program length consisted of 9 to 36 semester credit hours required for program completion. Technical diplomas had an admission requirement for COMPASS scores in mathematics (26), reading (70), and writing (32); and program length consisted of 37 to 50 semester credit hours required for program completion. The associate of applied science degrees had an admission requirement for COMPASS scores in algebra (37), reading (81), and writing (62); and program length consisted of 60 to 73 semester credit hours required for program completion (ATC, 2014c).

Conclusions

The results from this study detected that there was no significant relationship between the displaced workers' prior annual income level, education level upon entrance and work experience on their level of program completion. However, findings did suggest a relationship between income level and completion level for those students from the survey group who had a prior annual income of less than

$10k and within the $31k to $50k range. Whereas, 31 out of 36 (86%) students who recorded their prior annual income level less than $10k and within the $31k to $50k range received awards at the moderate to highest program level offered at the college (technical diploma and AAS degree). Furthermore, the findings did suggest a relationship between educational level upon entrance and program completion level for students from the survey group who reported an education at the GED, high school diploma and some college level. Whereas, 41 out of 52 (79%) students who achieved awards at the technical diploma and associate of applied science degree level recorded an education at the high school diploma or some college level upon entrance to the college.

Additionally, the results from this study revealed that there was a significant relationship between the displaced workers' literacy level, as measured by COMPASS scores and work status on their level of program completion. It appeared that literacy level at or above the college's admission requirements had a positive relationship with the displaced workers' level of program completion. The students' quantitative literacy (Mathematics and Algebra) was found to be a significant predictor in their program completion level. In regards to work status, there appeared to be a situational relationship between the students' employment status and their level of program completion. It appeared that those students who reported their current work status as full-time, full-time/part-time and unemployed, to be a situational relationship between their work status and program completion level. Whereas, 36 out of 48 (75%) students who achieved awards at the moderate to highest program level offered at the college (technical diploma level or AAS degree) reported to have full-time and

full-time/part-time employment, and five out of eight (63%) students who achieved awards at the lowest program level offered at the college (TCC) reported their employment status as unemployed.

Therefore, the researcher extracted five conclusions from the findings in this study:

1. The students who reported a prior annual income level within the $10k to $30k and above $50k range will require more academic and personal attention, in order to support their efforts in completing programs at the highest level offered at the college. Furthermore, those students' prior annual income level that were below $10k and within the $31k to $50k range should not be taken in consideration with regards to providing academic and other means of support.

2. The students' level of prior education attainment should not be taken in consideration with regards to providing academic and other means of support. However, when comparing GED and high school students; the students with a GED educational level might require some additional attention.

3. The students' literacy level, as measured by Reading, Writing, Mathematics and Algebra COMPASS scores, illustrated that students with low scores will require additional academic assistance in order to attain a credential at the highest program level within the college.

4. Students' work experience should not be taken in consideration with regards to providing academic and other means of support.

5. Students' current work status such as unemployed showed that students will need additional academic support in order to attain a credential at the highest program level within the program.

Recommendations for Practice

According to the findings from this study, there were 262 credentials earned by study participants during the Fall 2009 through Summer 2014 academic terms at Albany Technical College. The most frequent level of completion achieved by study participants was the technical diploma (63%), followed by the technical certificate of credit (27%) and the level of completion least achieved was the associate of applied science degree (10%). The Air Conditioning Technology (AIRC) program recorded the most awards granted at the technical certificate of credit level (23%); Diesel Equipment Technology (DIET) program recorded the most awards granted at the technical diploma level (13%); and Business Logistics Technology (LOGI), Business Management Technology (MGMT), and Computer Information Technology (CIST) programs recorded the most awards granted at the associate of applied science degree level (36%). In addition, the study's findings showed that 5% of study participants had completed more than one credential, and 15% had completed a credential, but were enrolled at the technical college during the Fall 2014 academic term. However, 20% of study participants failed to complete requirements in their program of study, and consequently withdrew from the college without earning a credential. Therefore, these findings have guided the researcher to make the following recommendations to improve practices and strategies designed to assist students with matriculating from the technical diploma level to associate of applied science degree level, making well informed program decisions at the onset of their college admission, in order to expedite the students' return to the workforce, and to significantly reduce or eliminate barriers that impede students from achieving their educational objectives.

The United States Bureau of Labor Statistics (2013a) has projected that from 2010 through 2020 there would be an increase in occupations requiring an associate's degree for entry level positions. This projection, in conjunction with the Complete College Georgia initiative, has prompted colleges to revisit their methods of instructional delivery and structure program pathways in a manner that would provide a seamless approach towards accelerated student success (Complete College Georgia, 2011). In order to increase the number technical diploma graduates to matriculate into the associate degree programs, the researcher recommends five actions that should be implemented by technical colleges:

1. Technical colleges should enhance their efforts near the beginning of students' educational journey towards mandating tutorial services for students, who illustrate a deficiency in historical difficult courses such as College Algebra (MATH 1111). For example, Albany Technical College has invested financial and human capital into developing an Academic Achievement Center (AAC). The AAC has been equipped with state of the art equipment and personnel such as an electronic tracking system, computer labs, promethean boards, and full and part-time subject matter tutors. The purpose of the center was to provide additional academic support to students who were experiencing academic difficulty and assist students or potential students with preparation for college entrance exams, such as the COMPASS test (ATCd, 2014). This recommended practice was drawn from direct findings of the research question concerning the displaced workers' literacy level.

2. The researcher recommends that mandatory career counseling and advising sessions should be provided to each entering student, at technical colleges, in order to

increase awareness of high demand and high wage careers and financial resources available in college programs. An observation from the study revealed that over half (58%) of the surveyed population reported that that they did not find gainful employment within 6 months of program completion. The information shared in career counseling sessions would prepare students to make well informed decisions on their program of study selection and the level of program completion most desired by employers, in order to expedite their return to the workforce. For example, students fully admitted at one of the 24 technical colleges within the Technical College System of Georgia (TCSG) during the Fall 2014 academic term, who were recipients of the Helping Outstanding Pupils Educationally (HOPE) grant, and enrolled in one of the following TSCG programs: Commercial Truck Driving; Diesel Mechanic; Early Childhood Education; Healthcare Technologies; Information Technology, Practical Nursing; and Welding; were possibly eligible for receiving additional financial assistance from Georgia's Strategic Industries Workforce Development Grant (SWIDG, 2014). The occupational programs under the SWIDG have been identified as occupations in high demand for skilled workers. Whereas the objective of technical colleges should be to increase the level of associate of applied science degree graduates, this practice should not discredit or devalue the technical certificate of credit or technical diploma credential, but encourage students to seek the highest award offered at technical colleges. This recommended practice was drawn from an observation in the study of the number of students (20%) pursing multiple levels of credentials.

3. Technical colleges should develop and implement second-chance strategies

designed to bring back displaced workers who left without earning a credential. An observation in the study showed that 20% of the population started their educational journey, but failed to earn a credential and consequently withdrew from the college. As previously mentioned in the literature review, McGivney (2004) suggested that personal factors such as employment status may interrupt an adult student's educational objectives and result in the adult student's complete withdrawal from school. Therefore, initiatives such as Georgia's "Go Back Move Ahead" were designed to make returning to college easier for non-completers by establishing simpler enrollment processes, providing returnees with a personal advisor, offering various ways to transfer credit hours, and offering more course options such as face-to face, on-line, weekend and hybrid (GBMA, 2014). The researcher believes that the "Go Back Move Ahead" initiative may be more beneficial to displaced workers, who are returning to college, if colleges offered an academic forgiveness program, as well.

4. The researcher recommends that technical colleges routinely promote programs with articulation agreements with 4-year colleges or universities to the displaced worker population, in an effort to create seamless access to education opportunities and improve the probability of career placement and advancement. An observation in the study disclosed that 63% of surveyed participants indicated that they planned to continue their education at a 4-year college or university after their program completion. For example, the Adult and Career Education Department (ACED) at Valdosta State University offered a Bachelor of Applied Science (B.A.S.) Degree in Human Capital Performance that was designed for students in technical colleges, who were awarded an Associate of Applied Science Degree. This

agreement provides an avenue for students in technical colleges an opportunity to articulate their earned credits toward a 4-year degree (VSU, 2014).

5. The researcher recommends that technical colleges should develop specific strategies to address the displaced worker population during technical colleges' annual or bi-annual strategic planning sessions. Periodically, local communities, in which technical colleges serve, have been known to experience employee layoffs. Therefore, the researcher recommends that routine discussion and brainstorming on how to best serve this unique population should become a part of technical colleges' 10-year improvement plans. In an effort to improve the probability of success for this unique population, approaches should be customized to meet the exceptional needs of displaced workers.

Recommendations for Further Research

The findings in this study provided insight into the relationship between displaced workers' attributes such as prior annual income level, education level upon entrance, literacy level, work status and experience and level of program completion at a technical college. Information presented in this study may be best served as supplemental research to existing research on the topic and to the executive leadership team of technical colleges in the state of Georgia. While research questions presented in this study were answered, the researcher recommends that further research be conducted in the following seven areas:

1. Due to conflicting results in the relationship between education level upon entrance and program completion level among the archival and survey groups, the researcher recommends further investigation into this area.

2. The reasons for non-completion by study participants were not explored in this study. However, the researcher concluded that this was an important finding in the study that deserves further investigation. Therefore, the researcher recommends further investigation into the reasons and causes of the displaced worker's complete withdrawal from a technical college, before earning the desired credential.

3. The researcher recommends further investigation into the viability of expanding prior learning assessment (PLA) credits for work experience to be applied to technical certificate of credit, technical diploma and associate of applied science degree programs.

4. The researcher recommends further investigation into understanding and identifying effective approaches that could enhance students' completion rates such as academic guided pathways, the role of business and industry and academic "early alert" systems.

5. The researcher recommends further investigation into identifying best practices for students with less than a high school education to earn a GED credential.

6. The researcher recommends further investigation into the relationship between displaced workers' motivation, family support, culture, physical health, and geographic location and program completion level.

7. The researcher recommends that the study be duplicated on a larger scale in order to further examine the relationships investigated in this study.

Final Significance

The theoretical framework or lens through which the findings of this study were viewed was the Human Capital Theory. The rich and profound history of Albany Technical College being the preferred college for technical education and producers of quality employees for employers, in the southwest Georgia region, has been documented since the college's inception, in 1961. In fact, the study revealed that 421 documented displaced workers elected to enroll into Albany Technical College during the Fall 2009 through Summer 2014 academic terms in which 262 credentials were awarded. This fact suggested that citizens of southwest Georgia have historically recognized Albany Technical College as an appropriate choice for workforce development and as an institution dedicated to the production of human capital. Human Capital theory suggested that when a person possesses desired knowledge, skill and ability that he/she becomes a more valuable employee (Becker, 1993). According to Becker (2012), acquiring a higher level of education is a principal investment towards higher earnings. For example, Albany Technical College reported for the academic year 2012, 565 graduates found employment in field and 314 graduates found employment within six months of graduation in related fields (ATCb, 2014).

Results of this study should contribute to the continuous improvement toward student success and the production of skilled workers by Georgia's technical colleges. Furthermore, results in this study were significant in regards to the Georgia Governor's initiative, "Go Back Move Ahead," Complete College Georgia agenda, the objectives of Albany Technical College and Technical College System of Georgia,

and meeting the workforce needs and demands of local employers. In a sincere effort to produce a well-educated, skilled and globally competitive workforce and economically strong communities, this study has provided research based results from which to improve policies and practices, recommendations for practice and areas that should be considered for further research, in order to improve desired outcomes for displaced workers at technical colleges. The capacity of Georgia's economy depends heavily on the workforce preparedness, a high quality and quantity of human capital, its ability to meet the demands of a contemporary society and the ability to predict unforeseen skills needed for tomorrow's workforce. Therefore, the suggestions and recommendations in this study should be used by the offices of the Vice President for Academic Affairs, Vice President for Student Services and Enrollment Management and Vice President for Institutional Effectiveness at technical colleges to guide their strategic planning efforts, in order to address the needs of the displaced worker population throughout the regions in Georgia.

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APPENDIX A:

COMPASS/ACT/SAT Scores

APPENDIX A

COMPASS/ACT/SAT Admission Scores

TCC COMPASS Cut Score	SAT	ACT
Mathematics		
17		
Reading/Verbal		
46		
Writing		
15		
Diploma COMPASS Cut Score	SAT	ACT
Mathematics	Mathematics	Composite
26	400	17
Reading	Verbal	
70	430	
Writing		
32		
AAS COMPASS Cut Score	SAT	ACT
Algebra	Mathematics	Mathematics
37	440	19
Reading	Verbal	Verbal
81	480	20
Writing		
62		

Note. Retrieved from Albany Technical College official website.

APPENDIX B:

ASSET and COMPASS Scores

Appendix B
Linkage between ASSET Scores and COMPASS Scores

ASSET scale score	Linked COMPASS scale score value					
	Writing Skills (with ASSET Writing Skills	Reading (with ASSET Reading Skills)	Pre-Algebra(with ASSET Numerical Skills)	Algebra (with ASSET Elem. Algebra)	Algebra (with ASSET Interm. Algebra)	College Algebra (with ASSET College Algebra)
55			99	99	99	97
54	99		99	95	95	89
53	-	99	95	92	92	85
52	99	-	93	86	86	83
51	-	97	91	79	82	81
50	98	-	88	75	79	79
49	96	96	84	71	71	77
48	-	94	80	64	67	-
47	91	93	76	57	64	73
46	87	90	72	52	57	68
45	81	88	66	47	54	-
44	78	86	63	42	-	66
43	76	83	60	40	52	64
42	70	81	56	38	47	61
41	65	78	52	-	42	59
40	60	76	48	33	40	58
39	55	75	45	31	38	54
38	45	71	42	29	35	51
37	35	69	40	-	33	49
36	28	67	38	28	31	48
35	25	61	35	-	29	45
34	22	58	32	25	28	43
33	16	56	30	23	25	39
32		54	27	21	23	36
31			24	19	21	33
30			20	18	19	30
29			17	17	18	-
28			17	17	17	27
27			17	16	17	25
26			17	15	16	22
25			17	-	15	20
24				15	-	17
23				15	15	15

Retrieved from http://www.act.org/compass/pdf/Concordance.pdf.

APPENDIX C:

Technical Programs

Appendix C

Albany Technical College Programs

Prefix	Program Name	TCC	Diploma	AAS
ACCT	ACCOUNTING	x	x	x
ACRP	AUTO COLLISON REPAIR	x	x	
AIRC	AIR CONDITIONING	x	x	
AUTT	AUTOMOTIVE	x	x	
BFMT	BUILDING FACILITIES MAINTENANCE	x	x	
BUSN	BUSINESS ADMINSTRATIVE	x	x	x
CARP	CARPENTRY	x	x	
CDTL	COMMERICL TRUCK DRIVING	x		
CETC	CIVIL ENGINEERING	x		x
CIST	COMPUTER SUPPORT SPECIALIST	x	x	x
CMTT	CONSTRUCTION MANAGEMENT			x
COSM	COSMOTELGY	x	x	
CRJU	LAW ENFORCEMENT	x	x	x
CSPT	CENTRAL STERILE PROCESSING TECHNICIAN	x		
CUUL	CULINARY ARTS	x	x	x
DENA	DENTAL ASSISTING	x	x	
DFTG	DRAFTING	x	x	x
DIET	DIESEL	x	x	
DMPT	DESIGN AND MEDIA	x		x
ECCE	EARLY CHILDHOOD EDUCATION	x	x	x
ELCR	ELECTRONICS	x	x	x
ELTR	ELECTRICAL CONSTRUCTION	x	x	
EMET	ELECTROMECHNICAL ENGINEERING			x
EMSP	PARAMEDICINE		x	
ENGT	ELECTRICAL COMPUTER ENGINEERING		x	x
FRSC	FIRE SCIENCE	x	x	x
FRSA	FIRE SERVICES ADMINISTRATION			X
FREM	FIREFIGHTER/EMSP		X	
HIMT	HEALTH INFORMATION		x	x
HICT	HEALTH INFORMATION CODING		x	
HORT	HORTICULTURE	x	x	
HRTM	HOTEL RESTAURANT AND TOURIUSM	x	x	x
IDEL	INDUSTRIAL ELECTRICAL	X	X	
IDSY	IDUSTRIAL SYSTEMS	x	x	x

ISWD	INTERNET SPECIALIST WEBSITE DESIGN	X	X	X
LOGI	BUSINESS LOGISTICS	x	x	x
OMGT	OPERATIONS MANAGEMENT	X		X
MAST	MEDICAL ASSISTING	X	X	X
MGMT	BUSUNESS MANAGEMENT	x	x	x
MKGT	MARKETING	x	x	x
MSNR	MASNORY		x	
NRAT	NURSE AIDE	x		
NSPT	NETWORKING SPECIALIST		X	X
PCMT	PC MAINTENANCE SPECIALIST	x	x	x
PBLG	PLUMBING		x	
PCAT	PATIENT CARE	x		
PHAR	PHARMACY		x	x
PNSG	PRACTICAL NURSING			x
RADT	RADIOGOLY			x
RNSG	NURSING			X
SURG	SURGICIAL		X	
TELE	TELECOMMUNICATIONS			X
WELD	WELDING & JOINING	x	x	

Note. Retrieved from Albany Technical College official website.

APPENDIX D:

Survey Instrument

Appendix D
Displaced Worker Survey

Unites States Census Bureau

(Modified version)

Survey Questionnaire

1. What is your gender?

   - o Female
   - o Male

2. Which of the following best describes your age?

   - o Less than 20
   - o 20 to 25
   - o 26 to 30
   - o 31 to 35
   - o 36 to 40
   - o Over 40

3. Please select the race/ethnic group that best describes you?

   - o Black or African American
   - o White
   - o Hispanic or Latino
   - o Native American
   - o Asian

4. Are you currently employed?

   - o Yes
   - o No ⟶ skip to question 5

5. What is the status of your current employment?

- o Part-time (less than 30 hours per week)
- o Full-time (more than 30 hours per week)

6. Have you been unemployed for any amount of time in the past five years?

- o Yes
- o No ⟶ skip to question 7

7. How long were you unemployed?

- o Less than 6 months
- o Between 6 to 12 months
- o Between 12 to 18 months
- o More than 18 months

8. What was the reason for your job displacement?

- o Company or organization closure
- o Shift abolished
- o Company merger
- o Limited work available
- o Termination
- o

9. Which of the following best describes your employment history in the last five years?

- o Full-time
- o Part-time
- o Seasonal
- o Unemployed

- Both a & b

10. How many times have you experienced job displacement in your adult life?

- Once
- 2-4 times
- 5-7 times
- More than 7 times

11. What is the longest amount of time you have been without a job in your adult life?

- Less than 2 years
- Between 2-5 years
- Between 6-10 years
- Over 10 years

12. Which of the following best describes the type of work you have experienced in the last five years?

- Agricultural
- Business
- Professional
- Manufacturing
- Retail trade
- Wholesale trade
- Other (service, government)

13. What was your highest level of education attainment before you sought a credential from a technical college?

- High school diploma
- GED
- Some college
- AAS or AS degree
- BS degree
- Masters Degree or above

14. Please select one of the following that best describes your current status in post-secondary education.

- o First semester
- o Second to Fourth semester
- o More than four semesters
- o Graduate

15. Which level of program completion are you seeking or have sought in technical education?

- o Technical Certificate of Credit
- o Diploma
- o Associate of Applied Science
- o All the above

16. If you completed a program of study in technical education, what was your highest level of completion?

- o Technical Certificate if Credit
- o Diploma
- o Associate of Applied Science

17. Have or will you continue your education at a four year university or college?

- o Yes
- o No

18. Did you find gainful employment within six months of your program completion?

- o Yes
- o No

19. Which of the following best describes your annual income level prior to receiving a technical education credential?

- o Less than 10k
- o Between 10k to 20k
- o Between 21k to 30k
- o Between 31k to 40k
- o Between 41k to 50k
- o Over 50k

20. Which of the following best describes your annual income level six months after completion of a technical education credential?
    - o Less than 10k
    - o Between 10k to 20k
    - o Between 21k to 30k
    - o Between 31k to 40k
    - o Between 41k to 50k
    - o Over 50k

21. Which factor best describes your motivation to seek a post-secondary technical education credential?

    - o Job displacement
    - o Personal interest
    - o Family encouragement
    - o Career advancement
    - o All of the above

22. Please provide a rating of the fulfillment of service expectations and your overall opinion about the benefits of receiving a technical education credential.

    - o Excellent
    - o Good
    - o Average
    - o Poor

23. Would you likely recommend technical education to your friends or relatives?

    - o Yes
    - o No
    - o Maybe

APPENDIX E:

Institutional Review Board Exemption Approval

Institutional Review Board (IRB)
for the Protection of Human Research Participants

PROTOCOL EXEMPTION REPORT

PROTOCOL NUMBER: IRB-03088-2014 **INVESTIGATOR:** Emmett Griswold

PROJECT TITLE: An Institutional Study of the Raltionships Between Displace Workers' Attributes and the level of program completion in a Technical College

INSTITUTIONAL REVIEW BOARD DETERMINATION:

This research protocol is exempt from Institutional Review Board oversight under Exemption Category(ies):4. You may begin your study immediately. If the nature of the research project changes such that exemption criteria may no longer apply, please consult with the IRB Administrator (irb@valdosta.edu) before continuing your research.

ADDITIONAL COMMENTS/SUGGESTIONS:

Although not a requirement for exemption, the following suggestions are offered by the IRB Administrator to enhance the protection of participants and/or strengthen the research proposal:

NONE

☐ If this box is checked, please submit any documents you revise to the IRB Administrator at irb@valdosta.edu to ensure an updated record of your exemption.

Elizabeth W. Olphie 7/23/14

Elizabeth W. Olphie, IRB Administrator Date

Thank you for submitting an IRB application.
Please direct questions to irb@valdosta.edu or 229-259-5045.

Revised: 12.13.12

APPENDIX F:

Approval Letter

APPENDIX F
Approval Letter

Griswold, Emmett

From: Parker, Dr.Anthony
Sent: Friday, January 25, 2013 11:30 AM
To: Griswold, Emmett
Subject: RE: Research proposal

I certainly approve and would encourage your research project.

Anthony O. Parker, Ph.D.
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From: Griswold, Emmett
Sent: Friday, January 25, 2013 11:29 AM
To: Parker, Dr.Anthony
Subject: Research proposal

Dr. Parker:

I'm at the point in my doctoral studies of developing the research design and proposal for my research topic. My topic interest will focus on displaced workers. I will look specifically at the displaced workers from Albany's Cooper Tire plant, who enrolled at ATC after the plant closure. At this point, my central research question is: What factors influence program selection in post-secondary education among displaced workers? Since I'm requesting to utilized the data already collected by ATC to assist with this project, is there any other particular information from this population that you think will benefit the overall mission of the college?

Please remember that this topic has not been approved by my dissertation chairperson at this point. However, I have received positive feedback from the faculty and ACED program chair at VSU on this topic choice.

If you wish, I can schedule to meet with you face to face and discuss in further detail.

Thanks, EG

Emmett L. Griswold, III
Albany Technical College
Dean of Academic Affairs

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