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Factors associated with Adult Literacy Student Outcomes in Campus-based versus Community-based programs

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FACTORS ASSOCIATED WITH ADULT LITERACY STUDENT OUTCOMES IN
CAMPUS-BASED VERSUS COMMUNITY-BASED PROGRAMS

by

CHARLES HALL

(Under the Direction of Teri Denlea Melton)

ABSTRACT

In Georgia, the Technical College System of Georgia (TCSG) formally trains over 100,000 adult literacy students each year free of charge at a variety of campus-based and community-based programs located at community centers, churches, libraries, or businesses. A common, yet unproven, assumption among senior administrators and adult literacy faculty members at TCSG colleges is that adults who attend literacy classes embedded in the traditional college campus environment have better academic outcomes than those who attend only community-based programs. However, a gap currently exists in the literature with respect to a clear understanding of which student outcome variables are impacted when adult education classes are embedded on traditional college campuses. Therefore, the purpose of this study was to examine academic outcomes in reading and math, while controlling for potential covariates, between adult literacy students taking campus-based versus community-based classes.

This retrospective observational study found that site type does not have a significant effect on the change in TABE scaled scores in reading or math, even after controlling for covariates. However, site type does have an influence on math scores when considering its interaction with teacher status (full-time vs. part-time). When using

site type/teacher status (campus full time, campus part-time, and community part-time) as a factor that defined group comparisons, an ANOVA analysis showed that the change in math score between pretest and posttest was significantly lower with students taking classes from campus part-time teachers versus classes from campus full-time teachers. No significant difference was found in the change in math score between classes with campus full-time teachers and classes with community part-time teachers. Furthermore, years teaching at the College had a positive effect and length of time had a negative effect on the change in math score.

Teachers should be aware that adult education students who have a lower math pretest score may be at risk for less improvement in reading and that delayed math testing may have a negative impact on math improvement. These students should be monitored more closely and encouraged often between testing periods. Additionally, teachers with the least number of years teaching should be mentored by those with more experience with respect to math education. More specifically, leadership needs to determine if the College is optimizing support resources. Research data from the study provide insight to adult literacy education that may improve overall student outcomes to include academic level completion, or may allow for better allocation of vital financial resources by college administrators.

INDEX WORDS: Adult education, Literacy, Illiteracy, Academic Change Score, Campus-based, Community-based, Site type, Autonomy support, Academic self-efficacy, Environment, Reading, Math, Interest in school, Teacher availability, Classroom organization

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DEDICATION

This dissertation is dedicated first and foremost to my Lord and Savior, Jesus Christ, in whom I have abundant grace. I also dedicate this dissertation to my most wonderful wife, Pat; my children, April and Richard; and my grandchildren, Gracie, Sophia, and Charlotte. They all have sacrificed much to allow me the opportunity to pursue this dream. I only hope that the future brings many opportunities for me to make up for the lost time taken from each of them. I love them so very much and desire nothing more than to give of my whole self to their future.

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CHAPTER 1

INTRODUCTION

Over 90 million adults in the U.S. are considered functionally illiterate, lacking sufficient skills to meet daily needs in their families, their workplaces, and their communities (Berkman et al., 2004; Kutner et al., 2007). However, when literacy is achieved, individuals gain positive improvements in daily coping, skills and knowledge, self-confidence, self-esteem, and responsibility (Kutner et al.). Also, adults with higher literacy levels are more likely to be employed full time and earn higher wages (Kutner et al.). According to the U.S. Department of Labor, the unemployment rate for a person in 2011 without a high school diploma or General Educational Development Diploma (GED) was 4.7% higher than those with a diploma, 9.4% and 14.1%, respectively (Bureau of Labor and Statistics, Employment Projections: Education Pays, 2012). In addition, a person with a high school diploma or GED earned \$9,724 more annually than a non-high school graduate (Bureau of Labor and Statistics, Employment Projections: Education Pays, 2011). In Georgia, more than 1.2 million adults cannot benefit from this economic gain because they do not have a high school or GED diploma (Technical College System of Georgia 2009-2010 Fact Sheet and College Directory).

Within the U.S., federal adult education programs have been funded since the 1960s. Discretionary state grants for adult education were authorized by the Economic Opportunity Act of 1964 followed by authorization of state formula grants in 1966. Later, Congress passed the National Literacy Act (ALA) in 1991 with additional amendments in 1998 that created the Adult Education and Family Literacy Act (AEFLA), Title II of the Workforce Investment Act (WIA). In 1999, total appropriations for adult

education state grants due to the AEFLA were \$365 million. By 2005, total appropriations had almost doubled at \$570 million (Irwin, 2005).

While the upward appropriation trend slowed in the last several years, the amount given to states for the purpose of adult education was still high in FY 2011 with a total U.S. appropriation amount of \$596 million, of which Georgia received \$19 million (Dan-Meisser, 2011). However, the amount of appropriations to Georgia did not cover the total costs to serve the State's adult education needs. Through the Technical College System of Georgia (TCSG), Georgia has committed considerable financial resources to improve adult education utilizing additional financial resources to supplement the limited federal funds received.

Technical College System of Georgia Role

In an effort to correct the social and economic disparity for those Georgians who failed to graduate from high school, the TCSG, through their Office of Adult Education (OAE), provides adult education programs throughout dozens of colleges and other agencies within the state (Reed-Taylor, 2011). These adult education programs are focused on three main goals: to enable adult learners to study for and earn a GED, to provide opportunity for adult learners to continue their college education, and to improve adult learners' lives and standing in Georgia's workforce and their local community (Technical College System of Georgia 2009-2010 Fact Sheet and College Directory). According to a trend report developed by the TCSG in 2011, the organization has increased enrollment in its adult education programs by nearly 10,000 since 2007, with a positive economic impact to the State of Georgia of almost \$169 million in fiscal year 2009. Also, in FY 2009, adult education programs within the TCSG served almost

100,000 adult learners with greater than 20,000 receiving their GED (Technical College System of Georgia 2009-2010 Fact Sheet and College Directory). Such a large commitment by the TCSG contrasts to efforts across the nation where only approximately 34% of adult literacy training is managed by local colleges (Morest, 2004). However, this effort is not without substantial cost as demonstrated by TCSG expenditures to this vital area at over \$33 million in 2008 (Technical College System of Georgia FY 2008 Annual Report, 2009). This amount is twice the federal appropriations to the state in 2008 from the AFELA, which was slightly under \$16 million during that fiscal year (Keenan, 2008).

The TCSG's OAE oversees two secondary management groups at various local areas for delivery of adult education in Georgia. These secondary management groups are Community-Based Organizations (CBO), e.g., Catholic Charities of the Archdiocese of Atlanta and Center for Pan Asian Community Services, and Service Delivery Areas (SDA), e.g., public school systems and technical colleges. However, locally, each of the CBOs and SDAs also provide management for a number of community-based sites, e.g., churches and community centers. Currently, there are four CBOs and 30 SDAs overseen by the OAE. Of the SDAs, 23 are directly managed by a local technical college, with each providing campus-based classes and classes at three or more community-based sites. (GALIS, 2011)

Research Rationale

As previously stated, the majority of colleges governed by the TCSG's OAE as SDAs provide opportunity for adult education students to receive instruction in a class embedded directly on the college campus or to take classes at one of their managed

community-based sites. These local community-based sites are not to be confused with CBOs, an assigned management organization, which, like SDAs, also manage community-based sites in their local areas. Anecdotal evidence suggests that administrators and faculty at some of the TCSG colleges functioning as SDAs believe that adult education students enrolled in embedded, campus-based classes, versus classes delivered at non-campus, community-based sites, will have improved overall academic performance, academic self-efficacy, and perceived autonomy (C.R. Hall, personal communication, November 3-4, 2010). Research indicates a relationship among these variables at the K-12 and college settings (Kuh, Kinzie, Schuh, & Whitt, 2005; Tinto, 1975, 1993); however, there exists little, if any, research on the impact of these variables in specific areas of the adult literacy student population, particularly at the local level of adult literacy training (Comings & Soricones, 2007). Other researchers, such as Prince and Jenkins (2005), identified the need for future studies in community and technical colleges to specifically identify adult literacy programs and services that are associated with a higher probability of student success.

To better understand adult literacy training at Augusta Technical College, one of the SDAs overseen by the TCSG's OAE, this study explored the influence of adult literacy students taking adult education classes embedded directly on campus in an academic college setting as compared to those who attended classes at off-campus, community-based sites. Specifically, the influence of potential covariates on academic gain was explored. Study results provided more insight into adult literacy education, which could improve overall student outcomes.

Research Question

The purpose of this study was to compare student outcomes between adult education students taking classes embedded on-campus versus students taking classes at off-campus locations. An understanding of variables impacting the academic achievement of students attending adult education programs may be useful for college administrators in managing these programs to maximize optimal student outcomes. The overarching question this study sought to address was the following: Is there a difference in academic performance, measured by the change in reading and math TABE scaled scores, between campus-based versus community-based students while controlling for age, sex, race, teacher status (part-time vs. full-time), days between testing, academic self-efficacy, perceived autonomy, student interest in school, teacher availability, and classroom organization?

Significance of Study

Research has suggested that illiterate adults suffer profound negative impacts to their professional, economic, social, and family lives (Berkman et al., 2004). Moreover, the overall social and economic impact is felt by the country as a whole (Kutner et al., 2007). Unless mechanisms are set in motion to offer illiterate individuals an opportunity to rise above the socioeconomic woes that entrap them or to help avoid the poor decisions that plague them, society in general will continue to bear significant costs. Public educational institutions that provide adult education share a large cost burden in providing adult education (Technical College System of Georgia FY 2008 Annual Report, 2009); thus, there is an obligation to determine the best methods to provide an education that achieves the best outcomes with the most efficient use of valuable

resources. In addition, this study contributes to a better understanding of adult education variables that impact student success, which may provide opportunities for leadership to improve adult education programs or to provide better guidance to individuals when choosing program delivery options. As a result, individual students could achieve higher adult literacy level completion, which could lead to an achievement of increased personal and economic self-sufficiency.

Definition of Terms

Academic Self-efficacy: Academic self-efficacy refers to an individual's belief, or conviction, that he or she can successfully achieve at a designated level on an academic task or can attain a specific academic goal (Zimmerman, 1995). For the purposes of this study, academic self-efficacy is defined as the motivation subscale score on the MSLQ.

Adult Basic Education (ABE): ABE is a program in adult education designed to provide instruction for adults who lack competence in reading, writing, speaking, problem solving or computation at functional levels necessary for society, job, or family. There are four educational functional levels. The first is *Beginning ABE Literacy* (Grade Levels 0-1.9), the second is *Beginning Basic Education* (Grade Levels 2.0-3.9), the third is, *Low Intermediate Basic Education* (Grade Levels 4.0-5.9), and the fourth is *High Intermediate Basic Education* (Grade Levels 6.0-8.9) (Reed-Taylor, 2011).

Adult Literacy: An individual's ability to read, write, and speak English, and compute

and solve problems at levels of proficiency necessary to function on the job and in society, and to achieve one's goals, and develop one's knowledge and potential (Irwin, 1991, p. 7).

Adult Secondary Education (ASE): ASE is a program in adult literacy designed to instruct adults who have some literacy skills and can function in everyday life, but who are not proficient at the high school level or who lack a graduation certificate, diploma, or equivalent from a secondary school. The program has two educational function levels. The first is *Low Adult Secondary Education* (Grade Levels 9.0-10.9) and the second is *High Adult Secondary Education* (Grade Levels 11.0-12.9). Adults in this program are also assessed with TABE for intake and program progress assessment (Reed-Taylor, 2011).

Augusta Technical College: Augusta Technical College is a moderately large technical college in the Technical College System of Georgia. The college is located in Augusta, GA, and was founded in 1961. The most recent reporting data indicates the college has a yearly academic enrollment of over 7,500 and adult education enrollment of over 2,500. The College's service area includes Richmond, Columbia, McDuffie, Burke, and Lincoln counties in Georgia.

Autonomy Support: Perceived autonomy support is the degree to which students assess their control and choice of their behavior (Deci & Ryan, 1985). For the purposes of this study, perceived autonomy was defined as a score on the short-version of the Learning Climate Questionnaire (LCQ).

Classroom Organization: For the purposes of this study, classroom organization was

defined as the organization score on the Organization/Clarity subscale of the SEEQ, which includes the ability of the teacher to provide clear explanations, to prepare course material, to match the course material to the Student Educational Plan, and to demonstrate to the student the goals of the class.

English as a Second Language (ESL): ESL is a program in adult literacy that focuses on adults who lack English language proficiency (Reed-Taylor, 2011).

General Education Development Diploma (GED) Examination: The GED test provides adults at least 16 years of age who are beyond the age of compulsory high school attendance an opportunity to earn a high school equivalency diploma.

Georgia Adult Learner Information System (GALIS): The GALIS is a web-based management information system. The GALIS system is a robust, real-time database used to manage and collect data needed to verify National Reporting System (NRS) compliance (TCSG GALIS User Manual, 2009).

Level Completion: Level completion is when an adult literacy student completes one educational functional level to another. For example, a student moves from ABE3 to ABE4 based on TABE testing.

National Reporting System for Adult Education (NRS): The NRS is a national reporting system developed by the U.S. Department of Education in the late 1990s as an outcome-based reporting system for the State-administered, federally funded adult education programs (Condelli, Padilla, & Angeles, 1999). Through the U.S. Department of Education's Division of Adult Education and Literacy (DAEL), each of the states' adult education directors are required by DAEL to manage a NRS reporting system that demonstrates learner outcomes for adult education.

Number of Days between Testing: For the purposes of this study, the number of days between testing was defined as the number of days between the most recent two TABE tests in each of the outcome areas (reading and math).

Student Interest in School: For the purposes of this study, student interest in school was defined as a score on the Learning/Values subscale of the SEEQ, which includes the students assessment of classroom challenge and stimulation, value of learning, subject interest, and understanding of the material presented in class.

Teacher Availability: For the purposes of this study, teacher availability was defined as a score on the Individual Rapport subscale of the SEEQ, which includes the students' perception of the friendliness of the teacher, the teacher's ability to make students feel welcome, the teacher's availability inside and outside of class, and the teacher's genuine interest in the student.

Teacher Status: For the purposes of this study, teacher status was defined as to whether the teacher was classified as either a full-time or part-time employee by the study institution.

Technical College System of Georgia (TCSG): The TCSG is the state agency responsible for overseeing Georgia's technical colleges, the adult education program, and a host of economic and workforce development programs.

Test of Adult Basic Education (TABE): The TABE is an adult literacy test used to assess current level of knowledge, which is called an intake point. The test provides both norm-referenced and competency-based information. The TABE is used to determine the course literacy level(s) a student will be placed in reading, mathematics, and language (Reed-Taylor, 2011).

Summary

Research clearly shows the impact of illiteracy on the economy of the nation and the state as well as the negative impacts to the personal, social, and economic areas of the illiterate adult. However, many adult students who dropped out of high school attempt to gain their GED by attending free classes provided by various organizations providing adult education. A main provider of these types of programs in the State of Georgia is the TCSG, which formally trains over 100,000 adult literacy students each year. Students attending the programs at one of 25 TCSG colleges either attend a class on an academic campus or at a non-campus, community-based site. There existed a gap in the literature with respect to a clear understanding if there is a difference in academic performance between those students attending a campus site versus those attending a community site. Therefore, the purpose of this study was to compare student academic outcomes between adult literacy students taking a class on-campus versus those who take a class off-campus. Also examined were factors that influenced the academic outcomes. A better understanding of these factors may be useful for college administrators in managing these programs to maximize optimal student outcomes.

CHAPTER 2

LITERATURE REVIEW

In support of the research study, the following background includes an overview of adult literacy and adult literacy education. In addition, a review of literature relating to variables that may impact academic outcomes is provided, including environmental impacts on academic performance, academic self-efficacy, and perceived autonomy.

Definition of Literacy

Historically, an illiterate individual has been generally defined as an individual having the inability to read or write, or even more specifically, one who has a state of being uneducated or insufficiently educated (McArthur, 1998). As an opposite definition, a literate individual would be generally defined as an individual having the ability to read and write, or more specifically, one who has a state of sufficient education. However, the simplicity of this definition is not so simple, particularly as it relates to changing social climates over the past few decades.

Imel and Grieve (1985) pointed out issues with defining literacy in the late 20th century. For example, while the authors noted that literacy in the 1930s and 1940s was considered simply as the ability to read and write a message, they stated that current definitions should focus on the effective or critical applications of these skills. Later, in 1991, Congress attempted to improve upon the basic definition of literacy through the enactment of legislation called the 1991 National Literacy Act (NLA) (Irwin, 1991). The NLA defined literacy as “an individual’s ability to read, write, and speak in English, and compute and solve problems at levels of proficiency necessary to function on the job and

in society, to achieve one's goals, and develop one's knowledge and potential" (Irwin, 1991, p. 7).

The National Assessment of Adult Literacy (NAAL) (2003), an assessment conducted by the Department of Education, further defined literacy as both task-based and skills-based (Kutner et al., 2007). The task-based component of the definition focuses on the everyday literacy tasks an adult can and cannot perform, while the skills-based definition focuses on the knowledge and skills an adult must possess in order to perform these tasks. Particular skills noted in the NAAL definition range from basic word recognition to higher level skills such as drawing appropriate inferences from continuous text. According to the NAAL, the primary goal of the application of new literacy definitions was intended to improve understanding of the skill differences between adults who are able to perform relatively challenging tasks as compared to those who are not. Some authors have gone even further in an attempt to define those individuals who are unable to perform certain tasks as functionally illiterate, i.e., lacking sufficient skills to meet daily needs in their families, their workplaces, and their communities (Berkman et al., 2004; Kutner et al., 2007).

Attempts to better refine the definitions of literacy in the 21st century are born out of social changes in the recent past. According to a recent National Council of Teachers of English (NCTE) Position Statement (National Council of Teachers of English, Executive Committee, 2008), the historical concept and definition of literacy has transformed in the 21st century. The NCTE stated that this transformation is primarily due to the technology advances of today, which have created more complex and intense literate environments that require persons to possess wide ranging abilities and

competencies inherent for quality daily living. For example, the NCTE stated that 21st century readers and writers require the ability to develop proficient use of technology, to build relationships with others to not only pose critical problems, but also to collaboratively and cross-culturally solve these problems, and to be able to purposely design and share information to global communities. In addition, the NCTE stated that individuals in the 21st century should be able to manage, analyze, and synthesize multiple information streams that are presented simultaneously; to create, review, critique, analyze, and evaluate, multi-media texts; and, finally, to adhere to the ethical responsibilities incumbent upon all based on the complex environments of today.

As noted above, finding an exact definition for literacy, or conversely, illiteracy, is difficult and controversial. However, the baseline definition of literacy provided by the 1991 NLA continues to be accepted as a standard today. Therefore, the 1991 NLA literacy definition will be used to guide this research (Irwin, 1991).

Adult Literacy Education Overview

Three basic program levels of adult literacy education exist. The first, Adult Basic Education (ABE), focuses on instruction in basic reading, writing, and computing skills. The second, Adult Secondary Education (ASE), focuses on instruction for adults who are seeking a high school diploma or a General Educational Development Diploma (GED). The third, English as a Second Language (ESL), focuses on adults who lack English language proficiency (Reed-Taylor, 2011). Since ESL is so significantly different from ASE and ABE programs (in that the program does not align directly with either secondary or postsecondary education), it will be excluded from further detailed discussion in this study.

The ABE program is comprised of four educational functional levels (EFL). The first, ABE1, is *Beginning ABE Literacy* (Grade Levels 0-1.9); the second, ABE2, is *Beginning Basic Education* (Grade Levels 2.0-3.9); the third, ABE3, is *Low Intermediate Basic Education* (Grade Levels 4.0-5.9); and the fourth, ABE4, is *High Intermediate Basic Education* (Grade Levels 6.0-8.9) (Reed-Taylor, 2011). The Adult Secondary Education (ASE) program has two EFLs. The first is ASE1, *Low Adult Secondary Education* (Grade Levels 9.0-10.9), and the second is ASE2, *High Adult Secondary Education* (Grade Levels 11.0-12.9).

To enter either the ABE or ASE program levels in reading, mathematics, and language, students must take the norm-referenced Test of Adult Basic Education (TABE) to assess current level of knowledge (Reed-Taylor, 2011). The TABE is also used to validate student progress toward educational functional level (EFL) completion (Reed-Taylor, 2011). Advanced students in the ASE level are counseled to attempt the GED examination (not mandatory), which provides adults at least 16 years of age, who are beyond the age of compulsory high school attendance, an opportunity to earn a high school equivalency diploma. Federal mandate requires that all TABE information, as well as other demographic and educational data, be entered by all State-administered, federally-funded adult education programs into a national outcome-based reporting system called the National Reporting System (NRS) for Adult Education (Condelli, Padilla, & Angeles, 1999). To meet the NRS requirement, the TCSG uses the Georgia Adult Learner Information System (GALIS), a web-based management information system (TCSG GALIS User Manual, 2009).

Variables Potentially Impacting Adult Literacy Outcomes

Academic achievement and persistence toward completion of an adult education program may be impacted by age (Jha, 1991; Watson, 1983), race (Sticht, 2002), and sex (Harman, 1983; Sticht, 2002). In earlier research, Watson (1983) found that older ABE students were more likely to achieve academically and persist while Harman (1983) concluded students would more likely be older, female, and unemployed. Later, Sticht (2002) found that men are less likely to enroll in adult literacy programs, to show up if they do enroll, or even to persist if they did enroll. However, the exact impact of demographic variables on adult education is controversial. For example, Comings, Parella, and Soricone (1999) stated that the ways in which adult education students are classified, i.e., age, sex, and race, typically provide inadequate information to specifically determine how to help adult education students to achieve academic success. This is supported by an even more recent report by Blecher et al. (2002), who found that the relationship between age and academic persistence was so inconsistent that one would find it difficult to state there was known causality. However, the authors clearly stated that future studies should continue to look at additional demographic findings relevant to adult literacy as it may provide more insight when analyzed in a specific context.

Other variables possibly influencing academic success in educational programs include environmental factors such as classroom lighting (Shavelson, Hubner, & Stanton, 1976), student seating arrangements (Shavelson, Hubner, & Stanton), control of the learning space (Brooks, 2010), or the fact that a college learning environment is supportive or non-supportive (Vermeulen & Schmidt, 2008). Early research on formal educational experiences of children demonstrated the influence of the environment

(Coppersmith & Feldman, 1974; Shavelson, Hubner, & Stanton) on a student's personality and beliefs toward their ability to achieve (Hartup & Sancillo, 1986; Scarr & Thomson, 1994). Many of these early public school studies demonstrated that the ambiance and climate within the classroom relates directly to the well-being and motivation of the students taking the class (Deci, Koestner, & Ryan, 1999; Deci, Schwartz, Sheinman, & Ryan, 1981). Moreover, Butler and McNeely (1987) found that the presence and assistance of caring and well-qualified staff in a classroom can also make a difference in student outcomes. More recently, McNerny, Dowson, Yeung, and Nelson (2005) determined that direct support from the teachers in the classroom impacted students' interest in schoolwork and academic achievement.

Beyond the K-12 environmental impact studies, additional research has found that colleges that provide a supportive campus environment conducive to increasing the academic success of students can increase student motivation (Davis, 1994; Vermeulen & Schmidt, 2008) and satisfaction (Karemera, Reuben, & Sillah, 2003). In addition, Vermeulen and Schmidt looked at other variables and found that positive staff-to-student and student-to-student interactions, along with a good composition and organization of the curriculum, enhanced student motivation and served as encouragement to increase student academic success. Understanding of these variables is important to this study as they are known to also impact student persistence and retention (Tinto, 1975, 1983; Tinto & Pusser, 2006).

Tinto (1975) provided early insight into variables that influenced retention in schools. Tinto pointed out that retention is strongly predicted by a student's degree of academic integration, which is impacted by variables such as teaching styles, learning

support, and facilities. In addition, retention is also strongly supported by a student's degree of social integration, which is impacted by individual and family attributes, school counseling, and institutional commitment to the student. Later, Tinto (1993) identified three major reasons for students leaving school, which are academic difficulties of the student, the inability of students to resolve their educational and occupational goals, and students' failure to remain incorporated in the intellectual and social life of the institutions.

As noted by Comings, Parella, and Soricones (1999), self-efficacy is also a variable to consider for those who teach, staff, or administer in adult literacy programs. Self-efficacy, defined as one's perceived belief in the capacity to perform an objective, is well-supported in the literature (e.g., Bandura, 2006; Brandon & Smith, 2009; Gist & Mitchell, 1992). Developed from early works on Social Learning Theory (SLT) advocated by Miller and Dollard (1942), the self-efficacy concept was expanded upon by Bandura in the 1960s. Later, Bandura (1986) published work on the Social Cognitive Theory (SCT) where he described SCT as a process involving the acquisition of knowledge and the subsequent learning of how it correlates directly with observational models such as personal imitation. The SCT postulates that people can be influenced by what others do, and that individual development of a learner is impacted and influenced by the observations of others, the individual's behavior, and the environment in which learning is occurring. Thus, the outcomes of learning for a person who is impacted by an effective modeling approach could be improved.

While Bandura (1977, 1991, 1993) reported much on generalized self-efficacy, other studies have demonstrated the importance of students possessing high academic

self-efficacy. Academic self-efficacy refers to an individual's belief, or conviction, that a designated level on an academic task or specific academic goal can be successfully achieved (Zimmerman, 1995). Jonson-Reid et al. (2005) found that self-efficacy plays a greater role in academic achievement than either self-concept or self-esteem, which supports a study by Vrugt, Langereis, and Hoogstraten (1997) who showed that academic self-efficacy among undergraduate students significantly contributed to exam performance. In earlier studies by Lent, Brown, and Larkin (1984, 1986), students with high academic self-efficacy achieved higher grades than students with low academic self-efficacy.

Another variable that may influence adult literacy students' academic achievement is their perception of autonomy support. Autonomy, along with competence and relatedness, is described by the self-determination theory (SDT) as a basic psychological need (Ryan & Deci, 2000). SDT emphasizes the influence of self-motivation on the behavioral regulation process, which, in turn, may affect behavioral outcomes (Ryan & Deci). Autonomy, like the other basic psychological needs, must be satisfied for people to be optimally motivated, to function effectively, and to be psychologically healthy (Ryan & Deci). These innate psychological needs are inherent in humans and drive individuals to be proactive with their potential, growth, development, and integrated functioning (Deci & Vansteenkiste, 2003). However, since optimization of individual development is not always automatic, actualization of an individual's inherent potential may need nurturing from their social environment (Deci & Vansteenkiste).

Pratt and Collins (2000) found that instructors who are nurturing in their academic environments are fundamentally concerned with the development of each student's concept of self as a learner and also respect the learner's self-concept and self-efficacy. Pratt and Collins further noted that instructors who rate nurturing as their dominant perspective care deeply about their learners, and that this nurturing perspective supports student effort as much as achievement. Blackwell (2008) stated that educators could use a nurturing perspective to assist those students who suffer from a low sense of self-efficacy, thus providing an environment conducive to autonomy support.

A study by Ryan and Powelson (1991) examined the effects of autonomy support and quality of relatedness with respect to motivational orientations and learning outcomes. The authors concluded from their review of literature that student success in educational environments may be dependent upon affective processes within the classroom and that optimal classroom environment can serve both learning and development of the students within the environment. According to Ryan and Powelson, autonomy supportive environments can lead to increased motivation in a student, and thus, increased success in student learning outcomes. With the knowledge that autonomy support may increase student motivation, which may lead to increased academic achievement (Ryan & Powelson), further understanding of motivation is needed.

There are two overarching types of motivation, intrinsic and extrinsic (Deci & Ryan, 1985). Intrinsic (or internal) motivation is natural and inherent in an individual and drives one to accept challenges and new possibilities (Ryan, 1995). Alternately, extrinsic motivation comes from external sources. Intrinsic motivation refers to one taking on an activity because it is self-satisfying, enjoyable, and interesting instead of just

doing the activity to reach some external goal, which is an extrinsic motivation (Ryan, 1995). Deci and Ryan described different types of extrinsic motivations that varied in terms of relative autonomy. According to the authors, these motivation types range from external regulation (the least autonomous or self-directed) to integrated regulation (the most autonomous type of extrinsic motivation, which shares qualities similar to intrinsic motivation). In students, factors that help satisfy the need of autonomy promote autonomous motivation and positive academic outcomes, whereas those that are likely to thwart satisfaction of this need diminish autonomous motivation and lead to poorer academic outcomes (Deci, Koestner, & Ryan, 1999).

In education, autonomous motivation can be impacted by environmental factors including the location and comfort of the classroom, the availability of resource and course materials, the availability of the teacher, and the teacher's utility of either an autonomy-supportive or controlling style, or combination of both (Grolnick & Ryan, 1987; Yong, 2005). According to Grolnick and Ryan (1987), either type of teacher motivational style can enhance learning; however, the quality of learning may be quite different when one is used more than the other in the classroom. When considering a teacher's potential impact on learning outcomes, Grolnick and Ryan found that a teacher who uses a controlling style may be perceived as coercive, pressuring, or authoritarian. The authors stated this may bring about an external perceived locus of causality in the student that may undermine the student's feelings of autonomy and self-determination. A teacher who uses an autonomy-supportive style is one who provides a student with freedom support, encourages autonomy, and implicates individuality. This style may facilitate an internal perceived locus of causality, which would enhance a student's

feelings of autonomy that could lead to a more self-determined regulation of his or her learning. Ultimately, when reviewing the two basic styles of autonomous support presented by Grolnick and Ryan, an autonomy-supportive style could lead to improved academic outcomes in adult education students.

In summary, this chapter has shown the importance for individuals today to have the basic ability to read, and write, and to compute and problem solve at levels of proficiency to hold down a job and to function in society (Irwin, 1991). In other words, it is important for an individual to become functionally literate to increase their income and quality of life in many social areas. To help the citizens of Georgia to overcome literacy deficits, the TCSG delivers classes via adult education programs throughout its 25 technical colleges at both campus-based and community-based sites. In adult education, research has demonstrated some influence of demographic variables on academic performance, e.g., age, sex. Moreover, research in both secondary and postsecondary schools has highlighted the influence of other environmentally-related variables on academic performance, e.g., classroom lighting, teacher availability, teaching style, classroom organization. Furthermore, student learning outcomes may be affected by the student's perception of autonomy support provided by a teacher or their belief that they can attain a specific academic goal, i.e., they possess academic self-efficacy. However, there is no empirical research that shows the influence of these types of variables on the academic outcomes of adult education students who attend classes at a campus-based versus a community-based site.

CHAPTER 3

METHOD

This chapter explains the methods adopted for this study. The purpose of the research is briefly discussed again. A discussion of the study setting and participants is also included along with a review of the overall study design. Additionally, the procedures used in the data collection process are included. Lastly, the data analysis process is clearly described.

Purpose of the Research

The purpose of this study was to determine if the environmental setting influences student academic outcomes in an adult education population. More specifically, the academic outcomes of students taking classes in a college setting versus off-campus locations in the community were examined. The overarching question that this study sought to address is the following: Is there a difference in academic achievement, measured by the change in reading and math TABE scaled scores, between campus-based versus community-based students while controlling for age, sex, race, teacher status (part-time vs. full-time), days between testing, academic self-efficacy, perceived autonomy, student interest in school, teacher availability, and classroom organization?

Design

This was a retrospective observational study comparing academic outcomes between campus-based and community-based adult education classes at Augusta Technical College. The College offers adult education classes at 27 sites: three campus-based (Main, Thomson, and Grovetown) and 24 community-based. Students were recruited from 24 campus-based classes (22 from the Main campus, one from Thomson,

and one from Grovetown) and one class from each of 11 (out of 24) community-based sites. Day and night classes were represented in the targeted sample. After consenting students from each class filled out their responses to the questionnaire, scores for their last two TABE assessments for each academic area (reading and math), along with other demographic information, were obtained from the GALIS database, if they were available. The effect of site type and other covariates on academic achievement (measured as the difference in the last two assessment scores) in each academic area was examined and the most parsimonious model for predicting academic achievement was determined.

Setting and Participants

Augusta Technical College is one of 25 technical colleges in the TCSG. With an annual academic enrollment of over 7,600 and an adult education enrollment of greater than 2,500 in FY 2011, the College plays a vital role in the education of citizens within a five-county service area of Richmond, Columbia, Burke, McDuffie, and Lincoln counties. Adult education students have two basic options for class enrollment at the College, either a campus-based class at one of three campus sites or a community-based class at one of 24 community sites taught by college faculty. Table 1 below represents the types of locations providing adult education by the College. The campus-based sites included the Augusta-Richmond County main campus, the Thomson-McDuffie County branch campus, and the Grovetown-Columbia County Center. The 24 community sites were located in various types of community areas to include community centers, libraries, and churches.

Table 1*Adult Education Classroom Location Types at Augusta Technical College*

Location Type	Number of Campus Sites	Number of Community Sites
College campus	3	
Community center		11
Church		6
Adult learning center		3
High school		1
Non-profit business		1
Public library		1
Correctional institute		1
Totals	3	24

The specific target sample for this study included campus-based and community-based adult education students who qualified at ABE3, ABE4, ASE1, or ASE2 levels in either of the two study areas (reading and math). A preliminary review of the questions on the survey instrument conducted by a senior adult education instructor with over 30 years of experience, along with instrument field testing, determined that students who are at the level of ABE3 and above best represented an adult population of students that would understand the survey instrument and the rationale for the study, prior to giving consent. Enrollment at the college ranges from approximately 300 (Spring) to 600 (Fall) adult education students per semester. Using a sample size calculator for linear models,

an estimated maximum sample size of 174 subjects needed was determined based on an alpha level of 0.05, power of 80%, r of .3, and 10 degrees of freedom.

Instrumentation

The survey instrument for this study (Appendix A) was comprised of 21 questions combined from the Learning Climate Questionnaire (LCQ; six items), the Students' Evaluation of Educational Quality (SEEQ; 11 items), and the Motivated Strategies for Learning Questionnaire (MSLQ; four items). The LCQ is available in two versions, with the short form consisting of six items ($\alpha = .91$) and the long form consisting of 15 items ($\alpha = .94$) (Williams & Deci, 1996; Black & Deci, 2000). The short form of the LCQ was used to measure students' perceptions of autonomy support provided by their adult education instructors and was selected over the longer 15-item version to keep all three self-report scales of a similar length in the study.

The full SEEQ, a 35-item instrument, uses nine scales to evaluate teaching skills including Learning/Value, Instructor Enthusiasm, Organization/Clarity, Group Interaction, Individual Rapport, Breadth of Coverage, Examination/Grading, Assignments/Readings, and Workload/Difficulty. Three of the nine scales were used for this study. Specifically, the Learning/Value subscale (four items) was used to assess the students' interest in school, the Organization/Clarity subscale (three items) was used to assess classroom organization, and the Individual Rapport subscale (four items) was used to assess instructor availability. The SEEQ has excellent reliability and reasonable validity, when the scores of 10 to 15 students are used to evaluate teachers, with alpha coefficients ranging from .87 to .98 (Marsh, 1984) and subscale interrater reliability estimates for class average responses ranging from .90 to .95 (Marsh & Hocevar, 1984).

Using a modified SEEQ containing six of the nine scales as an indicator of educational quality, Coffey and Gibbs (2001), using factor analysis, demonstrated a robust factor structure with an α coefficient of .94. However, the reliability is moderately diminished as the number of students assessed decreases. Marsh (1987) stated that the estimated reliability is .95 for 50 students, .90 for 25 students, and .74 for 10 students. This was not a problem for this research study as greater than 50 students were analyzed.

The MSLQ is a self-report instrument comprised of 81 items to assess students' motivational orientations and their use of different learning strategies for a course (Pintrich, Smith, Garcia, & McKeachie, 1991). The full MSLQ consists of six motivation subscales and nine learning strategy subscales (Pintrich, Smith, Garcia, & McKeachie). Scaled correlations with academic success are moderately significant, demonstrating predictive validity with alphas ranging from .52 to .93 (Pintrich, Smith, Garcia, & McKeachie, 1993). Each of the subscales is considered modular and can be used singularly or in combination with other subscales by a researcher (Pintrich, Smith, Garcia, & McKeachie, 1993). Thus, for the purposes of this study, the motivation subscale that addresses self-efficacy for learning and performance was used to assess academic self-efficacy of the students.

In summary, the questionnaire measured five potential covariate areas. Questions one through six assessed autonomy support, questions seven through 10 assessed student interest in school, questions 11-13 assessed classroom organization, questions 14-17 assessed instructor availability, and questions 18-21 assessed academic self-efficacy. Each item on the combined instrument was measured on a five-point Likert-type scale (1 = strongly disagree; 5 = strongly agree).

Procedures

Prior to conducting the research, approval was received from Georgia Southern University's Institutional Review Board (IRB) (Appendix B) and Augusta Technical College administration. An independent, trained data collector visited each class to explain the research project to the students and obtained informed consents (Appendix C). The data collector then administered a paper-based instrument to consenting adult students. Students were ensured of survey confidentiality. Each student was initially identified by their name, their unique 900 college number, and their birth date. Those who did not consent to participate were asked to remain in the classroom until all instruments were completed. The instructor was asked to leave the classroom during the survey process.

Upon survey completion, instruments were immediately secured in a confidential envelope. The data collector then provided the completed instruments in a sealed envelope directly to the researcher who recorded, analyzed, and secured collected data. For each student who consented and completed the survey, data related to academic achievement, demographics, and faculty status were obtained from the GALIS database. In the final database used for analysis, data were de-identified by removal of student names and other identifying information, and each student was assigned a unique subject number related only to the study.

Preliminary data preparation was conducted to format data for analysis. The two TABE areas for reading and math were analyzed separately. The outcome variable, student Change Score (for each area) was calculated as the difference in two successive scaled TABE scores within the data. Not all students had a pretest and posttest for

reading and math, and many students had more than two tests for a single area. Therefore, a consistent selection method of pretest and posttest was needed. It was decided that the last two tests for each subject would be used in the analysis with the first classified as pretest and the last classified as posttest.

Independent variables were investigated for multicollinearity and an appropriate list of covariates was determined. Multicollinearity is a statistical phenomenon in which two or more predictor variables in a multiple regression model are highly correlated (Gall, Borg, & Gall, 2007). When multicollinearity exists, the calculations between individual predictors may be affected with creation of invalid results (Gall, Borg, & Gall). The main predictor variable was labeled Site Type with the two types represented as Campus and Community. In addition, for the final data analysis, five new variables (Autonomy Support Total, Student Interest in School Total, Classroom Organization Total, Teacher Availability Total, and Self-Efficacy Total) were created from the individual survey questions to represent the five questionnaire areas. If the response to a questionnaire item was missing, the total was not calculated for that section for that subject and therefore was not included in the calculations to prevent missing data from negatively affecting section totals. Cronbach's alpha was calculated to assess the internal consistency of the individual questionnaire items within each section (Gall, Borg, & Gall, 2007).

Interactions between independent variables were also considered to determine the final list of covariates. Interactions between independent variables may produce inaccurate results when used in an ANCOVA analysis (Gall, Borg, & Gall, 2007). Analysis was then performed using ANCOVA to examine the relationship between the

primary independent variable, Site Type, and the dependent variable, Change Score, while controlling for covariates. ANCOVA is a statistical technique combining features of analysis and regression to augment the analysis of variance model containing factor effects with one or more additional quantitative variables related to the variable of response (Kutner, Nachtsheim, Neter, & Li, 2005). The specific purpose of the ANCOVA analysis is to reduce the variance of error terms in the final model to achieve more preciseness (Kutner, Nachtsheim, Neter, & Li). Finally, the best and most parsimonious model was determined by choosing the final explanatory variables based on their significant contribution to the overall model.

Data Analysis

SPSS Version 19 was used for all statistical analyses. An alpha level of 0.05 was used to assess significance. Descriptive statistics were calculated for all relevant variables. Means and standard deviations were calculated for quantitative variables; percentages were created for categorical variables. Because of the small number of observations for Asians ($n = 3$) and Hawaiian Pacific Islander ($n = 1$), these observations were included in the White race category.

Preliminary analysis of the data included an examination of the distribution of all variables. In particular, normality was assessed. A mean score for each section of the questionnaire (for each subject) was calculated for use in the statistical analyses. If a subject had a question within a section which was not answered, the mean score for that section (for that subject) was not calculated, and therefore, not included to prevent missing data from negatively affecting section means. Three subjects each had one

missing question; their related sections were excluded from the mean calculations for this reason.

Analysis of covariance (ANCOVA) was utilized to analyze the effect of site type on academic achievement while adjusting for the effects of other variables. The most parsimonious model was then created. The change in TABE scaled scores for reading and math were analyzed separately. Covariates for the ANCOVA analysis were established prior to the model building process.

To determine the appropriate covariates to use in the ANCOVA analysis, explanatory variables were assessed to determine which were significantly associated with the outcome variable. For the quantitative predictors, a correlation matrix was created to examine the relationship between the potential covariates and each outcome (Reading Score Difference and Math Score Difference). Qualitative predictors were assessed using a two-sample *t*-test. Predictor variables that were significantly correlated with the outcome were selected for entry into the ANCOVA model.

Prior to the analysis, assumptions of the ANCOVA method were verified. Homogeneity of regression slopes was confirmed by determining that interactions were not significant. In order to evaluate the appropriateness of the ANCOVA model, it is important to compare the regression lines to determine whether the condition of equal slopes in the covariance model is met (Kutner, Nachtsheim, Neter, & Li, 2005). The homogeneity of variances was confirmed with Levene's test.

Before entry into the ANCOVA model, the covariates that were significantly associated with the outcome were assessed for multicollinearity, with each other and with the main predictor, site type. Specifically, Pearson correlation coefficients were utilized

to determine if there were any quantitative covariates that were highly correlated with each other (Depoy & Gitlin, 1994). To examine the relationships of quantitative covariates with qualitative ones, a two-sample *t*-test was performed. A Chi-Square test was used to assess relationships between pairs of qualitative variables (Depoy & Gitlin, 1994).

In the ANCOVA analysis, the final selection of the covariates used in the model was determined by examining the contribution of each explanatory variable to the overall model, as well as the coefficient of determination (R^2) for the model. The coefficient of determination (R^2) is the proportion of the variability in the outcome that is explained by the predictors in the model (Kutner, Nachtsheim, Neter, & Li, 2005). Finally, parameter estimates were calculated, and the most parsimonious model was determined.

Limitations/Delimitations/Assumptions

First, the study is limited to adult education ABE and ASE students at Augusta Technical College; thus, the findings cannot be necessarily generalized to the adult education ABE and ASE population globally. Second, it would be difficult to generalize the findings to other technical colleges or community-based organizations as their governance may be so uniquely different as to prohibit re-creation of the study in their environment. Lastly, the community-based sites used for this study only employed part-time teachers. In other words, there were no full-time, off-campus teachers for comparison purposes.

The study was delimited to adult education students who were at an educational functional level of ABE3 and above in study areas analyzed. Also, analyses only included students enrolled for at least 40 hours of instruction who consented and

completed the instrument. The 40 hour exclusion was chosen as students in the adult education program at the College cannot retest until 40 hours of new instruction has occurred. Students are also limited to a maximum of 15 hours per week of class. Thus, the students included in the study did not posttest any sooner than three weeks after the most recent TABE testing. Students were excluded from the study if they were documented as having switched from campus to community-based programs.

The study is based on a few assumptions. First, the researcher assumed that the instrument selected would measure the outcome variables accurately. Second, the researcher believed that the students would be honest when providing answers to the survey instrument. Third, the researcher assumed that the Technical College System of Georgia would support the study as being beneficial in obtaining a better understanding of the adult education population and the impact to the management of adult education programs by senior leadership.

CHAPTER 4

REPORT OF DATA AND DATA ANALYSIS

The following are results from analyses conducted on data collected for the research study. Data for the target sample of subjects was collected from the GALIS database and the study questionnaire. The specific aim of this study was to determine if there is a difference in academic outcomes, measured by the change in reading and math TABE scaled scores, between campus-based versus community-based students while controlling for age, sex, race, teacher status (part-time vs. full-time), days between testing, academic self-efficacy, perceived autonomy, student interest in school, teacher availability, and classroom organization.

This chapter details the results of the study, which are organized to demonstrate demographic, general, ANCOVA results, and additional sections based on analyses necessary to clarify and support other result findings related to the research question. More specifically, results determined by ANCOVA and supporting analyses are presented in two primary sections, one for reading change score and one for math change score. Additional sections present other related findings. The results are summarized at the conclusion of the chapter.

Demographic Profile of the Respondents

A total of 150 consenting adult students were recruited from 25 campus-based classes and 11 (out of 24) community-based classes. Student age ranged from 18 to 72 years ($M = 29.4$, $SD = 10.99$). Table 2 shows the descriptive statistics of the study participants for the qualitative variables.

Table 2*Descriptive Statistics*

Variable	N	Percent
Student Sex		
Male	67	44.7
Female	83	55.3
Student Race		
White	31	20.7
Black	115	76.7
Asian	3	2.0
Other	1	0.7
Class Time		
Day	115	76.7
Evening	35	23.3
Site Type		
Campus	113	75.3
Community	37	24.7
Teacher Status		
Full-time	52	34.7
Part-time	98	65.3
Teacher Status by Site Type		
Full-time Campus	52	34.7
Part-time Campus	61	40.7
Part-time Community	37	24.7

Preliminary Findings

All quantitative variables were approximately normally distributed with the exception of the questionnaire data (reviewed later), which were positively skewed. Examination of the last two tests taken in reading and math (for all students) showed that the students' mean scores increased by 20 and 23 points, respectively. In addition, the mean number of days between pretest and posttest for reading and math was 140 days and 133 days, respectively. The significant results of the independent two-sample *t*-tests are listed below.

- Females scored significantly higher on the reading pretest than males, 547.79 (*SD* = 53.48) and 526.96 (*SD* = 45.76), respectively, $t(112) = -2.22, p = .029$.
- Females had significantly higher scores on questionnaire item seven (Student Interest in School section) than males, 4.25(*SD* = 0.83) and 3.86 (*SD* = 1.14), respectively, $t(118) = -2.39, p = .018$.
- Students of part-time teachers were significantly older than students of full-time teachers; mean age was 30.94(*SD* = 11.84) and 26.51 (*SD* = 8.22) years, respectively, $t(137) = -2.335, p = .010$.
- Students of full-time teachers had significantly greater improvement in math score between pretest and posttest than students of part-time teachers, 32.14 (*SD* = 32.89) and 17.91 (*SD* = 40.66) points, respectively, $t(139) = 2.12, p = .036$.
- Students of part-time teachers had significantly more days between math pretest and posttest than students of full-time teachers, 152.00 (*SD* = 84.67) and 99.50 (*SD* = 58.50), respectively, $t(139) = -3.90, p < .001$.

While not significantly different, the following observations are noteworthy.

- Females were older than males, 31.04 ($SD = 11.43$) years and 27.25 ($SD = 9.90$) years, respectively, $t(148) = -1.97, p = .051$.
- Students of part-time teachers had more days between reading pretest and posttest than students of full-time teachers, 147.53 ($SD = 84.56$) and 121.44 ($SD = 78.23$), respectively, $t(112) = -1.54, p = .126$.

When analyzed using two-sample t -tests, there were no significant differences in race (Whites vs. Blacks) when compared for all variables of interest.

Chi-Square tests showed that there were no statistically significant differences in the distribution of race or sex between campus-based and community-based classes. The Chi Square statistic compares the counts of categorical responses between two (or more) independent groups (Gall, Gall, & Borg, 2007). Also, race and sex distributions were not significantly different within each class time (day vs. evening). However, Teacher Status (full-time vs. part-time) is significantly associated ($p < .001$) with Site Type (campus vs. community). This is explained by the fact that all teachers at community-based classes were part-time, whereas campus-based classes had both part-time and full-time teachers. Table 3 below shows the results of the Chi Square analyses for sex, race, and teacher status.

TABLE 3*Site Type by Sex, Race, and Teacher Status*

Site Type	Campus n (%)	Community n (%)	χ^2	<i>df</i>	<i>p</i> -value
Sex			1.805	1	.179
Male	54 (47.8)	13 (35.1)			
Female	59 (52.2)	24 (64.9)			
Race			2.648	1	.104
White	32 (27.8)	5 (14.2)			
Black	83 (72.2)	30 (85.8)			
Teacher Status			26.061	1	<.001
Full-time	52 (46.0)	0			
Part-time	61 (54.0)	37 (100)			

Questionnaire Findings

The questionnaire used for this study, Appendix A, was comprised of 21 questions. Questions one through six assessed autonomy support, questions seven through 10 assessed the students' interest in school, questions 11-13 assessed classroom organization, questions 14-17 assessed instructor availability, and questions 18-21 assessed academic self-efficacy. Each item on the combined instrument was measured on a five-point Likert-type scale (1 = strongly disagree; 5 = strongly agree). For data analyses, five new variables were created to represent potential covariates to use in further analyses. Autonomy Support Total was created to represent the sum of questions one through six, Student Interest in School Total to represent the sum of questions seven through 10, Classroom Organization Total to represent the sum of questions 11 through 13, Instructor Availability Total to represent the sum of questions 14 through 17, and Academic Self-efficacy Total to represent the sum of questions 18 through 21.

Females had significantly higher scores on question seven in the Student Interest in School section (*I find the class intellectually challenging and stimulating.*) than males, 4.25 ($SD = 0.83$) and 3.86 ($SD = 1.14$), respectively, $t(118) = -2.39, p = .018$. No other significant findings were noted. When looking at the individual questions, both question seven in the Student Interest in School section (*I find the class intellectually challenging and stimulating.*) and question 17 in the Teacher Availability section (*My teacher is adequately accessible to students during office hours or after class.*) had the lowest mean value at 4.07. Question 20 in the Academic Self-efficacy sections (*I expect to do well in this class.*) had the highest mean value at 4.48. Furthermore, when looking at the question categories, the overall Teacher Availability section had the lowest mean question score of 4.19 and the overall Academic Self-efficacy section had the highest mean question score at 4.39. Table 4 below shows the summary results for the Questionnaire.

Table 4*Questionnaire Summary Results*

Variable	<i>N</i>	Minimum	Maximum	<i>M</i>	<i>SD</i>
Autonomy Support: Question 1	150	1	5	4.35	0.96
Autonomy Support: Question 2	150	1	5	4.37	0.89
Autonomy Support: Question 3	150	1	5	4.41	0.91
Autonomy Support: Question 4	150	1	5	4.40	0.86
Autonomy Support: Question 5	149	1	5	4.21	0.95
Autonomy Support: Question 6	150	1	5	4.22	0.93
Autonomy Support Total	149	6	30	25.95	4.86
Student Interest in School: Question 7	149	1	5	4.07	1.01
Student Interest in School: Question 8	150	1	5	4.35	1.00
Student Interest in School: Question 9	150	1	5	4.20	1.02
Student Interest in School: Question 10	150	1	5	4.25	0.87
Student Interest in School Total	149	4	20	16.87	3.22
Classroom Organization: Question 11	150	1	5	4.36	0.92
Classroom Organization: Question 12	149	1	5	4.20	1.05
Classroom Organization: Question 13	150	1	5	4.13	0.99
Classroom Organization Total	149	3	15	12.71	2.66
Instructor Availability: Question 14	150	1	5	4.17	1.19
Instructor Availability: Question 15	150	1	5	4.45	.94
Instructor Availability: Question 16	150	1	5	4.08	1.20
Instructor Availability: Question 17	150	1	5	4.07	1.07
Instructor Availability Total	150	4	20	16.77	3.76
Academic Self-efficacy: Question 18	150	1	5	4.37	0.87
Academic Self-efficacy: Question 19	150	1	5	4.33	0.92
Academic Self-efficacy: Question 20	150	1	5	4.48	0.86
Academic Self-efficacy: Question 21	150	1	5	4.37	0.97
Academic Self-efficacy Total	150	4	20	17.55	3.30
Overall Total	147	21	105	90.02	16.17

A reliability analysis was performed by calculating Cronbach's alpha overall for each subscale group of the questionnaire. Table 5 shows that all overall values were greater than .83 indicating a strong internal consistency among the individual items within each section.

Table 5

Reliability Analysis (Overall Alpha for Each Section)

Questionnaire Section	Cronbach's Alpha	N of Items
Autonomy Support (Questions 1 - 6)	.944	6
Student Interest in School (Questions 7 - 9)	.838	4
Classroom Organization (Questions 11 - 13)	.892	3
Teacher Availability (Questions 14 - 17)	.876	4
Academic Self-Efficacy (Questions 18 - 21)	.932	4

ANCOVA Results for Reading Change Score

A one-way between-groups analysis of covariance (ANCOVA) was conducted to compare academic achievement between two different site types for adult education classes in reading. The dependent variable, Reading Change Score, was calculated as Reading Posttest Score (reading posttest scaled TABE score) minus Reading Pretest Score (reading pretest scaled TABE score). The independent variable (factor), Site Type, included two levels, Campus and Community.

Pre-ANCOVA Analysis Results

Before beginning the ANCOVA analysis, a list of potential candidates for covariates in the model was determined. First, all independent variables were assessed for significant relationships with the outcome. Next, Pearson's correlation coefficient was examined for all possible pairs of each quantitative predictor with Reading Change Score. Based on findings of this analysis, only one quantitative variable, Math Pretest Score (math pretest scaled TABE score), was significantly correlated ($r = .230, p = .018$) with Reading Change Score, and thus was included as a potential covariate. Additionally, all qualitative predictors were examined for their association with Reading Change Score using a two-sample *t*-test. There were no significant associations from these analyses. Finally, the independence between the covariate and the factor of interest (Site Type) was confirmed with a *t*-test, $t(33) = -1.15, p = .258$.

Assumptions for the ANCOVA model were also examined. First, variances for the two groups based on Site Type (Campus and Community) were examined and confirmed as homogeneous by Levene's Test, $F(1, 103) = 0.101, p = .752$, when Math Pretest Score was included as a covariate in the model. Second, homogeneity of regression slopes was confirmed by examining the interactions of the factor and independent variables. All interactions were not significant ($p > .05$).

ANCOVA Analysis Results

Based on the pre-ANCOVA analyses, the covariate selected for use in the Reading Change Score model was Math Pretest Score. The ANCOVA analysis showed that Site Type did not have a significant effect on Reading Change Score after controlling for the effects of Math Pretest Score, $F(1, 102) = .112, p = .739$. However, the covariate

Math Pretest Score, $F(1, 102) = 5.409$, $p = .022$, was significantly related to Reading Change Score. Table 6 below shows the ANCOVA statistical findings for Reading Change Score by Site Type. Table 7 gives the means of the Reading Change Score by Site Type adjusted for the covariates.

Table 6

ANCOVA for Reading Change Score by Site Type

Source	Type III SS	df	MS	F	p-value
Corrected Model	12,622.57 ^a	2	6,311.28	2.92	.059
Intercept	7,825.16	1	7,825.16	3.62	.060
Math Pretest Score	11,696.95	1	11,696.95	5.41	.022
Site Type	242.11	1	242.11	.112	.739
Error	220,556.99	102	2,162.32		
Total	276,226.00	105			
Corrected Total	233,179.56	104			

a. R Squared = .054 (Adjusted R squared = .036)

Table 7*Adjusted Means by Site Type (Dependent Variable: Reading Change Score)*

Site Type	<i>M</i>	<i>SE</i>	95% Confidence Interval	
			Lower Bound	Upper Bound
Campus	19.37 ^a	5.24	8.97	29.77
Community	22.92 ^a	9.18	4.71	41.13

a. Covariate appearing in the model is evaluated at the following value: Math Pretest Score = 509.74

ANCOVA Model for Reading Change Score

The parameter estimates for the predictor variables (in Table 8 below) indicate that Math Pretest Score was positively related to Reading Change Score, indicating that as this variable increases, Reading Change Score also increases. Site Type did not have a significant effect on Reading Change Score.

Table 8*Parameter Estimates for Dependent Variable: Reading Change Score*

Parameter	Beta	<i>SE</i>	<i>t</i>	<i>p</i> -value	95% Confidence Interval	
					Lower Bound	Upper Bound
Intercept	-99.69	54.56	-1.83	.071	-207.91	8.53
Math Pretest Score	0.24	0.10	2.33	.022	0.04	0.45
Site Type	-3.55	10.61	-0.34	.739	-24.60	17.50

ANCOVA Results for Math Change Score

A one-way between-groups analysis of covariance (ANCOVA) was conducted to compare academic achievement between two different site types for adult education classes in math. The dependent variable, Math Change Score, was calculated as Math Posttest Score (math posttest scaled TABE score) minus Math Pretest Score (math pretest scaled TABE score). The independent variable (factor), Site Type, included two levels, Campus and Community.

Pre-ANCOVA Analysis Results

Before beginning the ANCOVA analysis, a list of potential candidates for covariates in the model was determined. First, all independent variables were assessed for significant relationships with the outcome. Pearson's correlation coefficient was examined for all possible pairs of each quantitative predictor with Math Change Score. Based on findings of this analysis, only one quantitative variable, Math Days Between Testing, was found to be significantly correlated ($r = -.224, p = .008$) with Math Change Score, and thus was included as a covariate. Next, all qualitative predictors were examined for their association with Math Change Score using a two-sample t -test. In this analysis, only Teacher Status, full-time or part-time, with respect to Math Change Score, was found to be a significant factor ($t = 2.121, df = 139, p = .036$), with students of full-time teachers showing, on the average, greater improvement than those with part-time teachers, 32.14 and 17.91 points, respectively. Therefore, Math Days Between Testing and Teacher Status were chosen as candidates for covariates in the ANCOVA model.

After the list of candidates for covariates associated with Math Change Score was determined, multicollinearity (between predictors) was examined. A significant

difference was found in Math Days Between Testing with respect to Teacher Status, $t(132) = -4.33, p < .001$. Next, the independence between Math Days Between Testing and the factor of interest (Site Type) was confirmed with a t -test, $t(139) = -0.33, p = .739$. Finally, upon further examination of the explanatory variables, it was determined that Teacher Status was significantly associated with Site Type, $\chi^2 = 26.06, df = 1, p < .001$.

Assumptions for the ANCOVA model were also examined. First, variances for the two groups based on Site Type (Campus and Community) were examined and confirmed as homogeneous by Levene's Test, $F(1, 139) = 0.404, p = .526$, when Math Days Between Testing was included as a covariate in the model. Second, homogeneity of regression slopes was confirmed by examining the interactions of factor and independent variables. All interactions were not significant ($p > .05$).

ANCOVA Analysis Results

The preliminary analysis to find appropriate covariates for the ANCOVA analysis yielded two variables (Math Days Between Testing and Teacher Status) significantly related to Site Type. Additionally, Teacher Status was highly correlated with Site Type as well as Math Days Between Testing. Since including covariates which are highly associated with other explanatory variables is not recommended, the researcher did not include Teacher Status in the analysis.

The ANCOVA analysis showed that Site Type did not have a significant effect on Math Change Score after controlling for the effects of Math Days Between Testing, $F(1, 138) = 0.561, p = .455$. However, the covariate Math Days Between Testing was significantly related to Math Change Score, $F(1, 138) = 7.429, p = .007$. Table 9 below

shows the ANCOVA statistical findings for Math Change Score by Site Type. Table 10 gives the means of the Site Type adjusted for the covariates.

Table 9

ANCOVA for Math Change Score by Site Type

Source	Type III			F	p-value
	SS	df	MS		
Corrected Model	11,251.78 ^a	2	5,625.89	3.94	.022
Intercept	51,035.09	1	51,035.09	35.75	<.001
Math Days Between Testing	10,606.44	1	10,606.44	7.43	.007
Site Type	801.42	1	801.42	0.56	.455
Error	197,031.96	138	1,427.77		
Total	282,597.00	141			
Corrected Total	208,283.75	140			

a. *R* Squared = .054 (Adjusted *R* squared = .040)

Table 10

Adjusted Means by Site Type (Dependent Variable: Math Change Score)

Site Type	M	SE	95% Confidence Interval	
			Lower Bound	Upper Bound
Campus	21.56 ^a	3.69	14.27	28.85
Community	27.03 ^a	6.30	14.58	39.49

a. Covariates appearing in the model are evaluated at the following values: Math Days Between Testing = 133.38.

ANCOVA Model for Math Change Score

The parameter estimates for the predictor variables (in Table 11 below) indicate that Math Days Between Testing was negatively related to Math Change Score, indicating that as this variable increases, Math Change Score decreases. Site Type did not have a significant effect on Math Change Score.

Table 11

Parameter Estimates for Dependent Variable: Math Change Score

Parameter	Beta	SE	t	p-value	95% Confidence Interval	
					Lower Bound	Upper Bound
Intercept	41.50	8.34	4.98	<.001	25.02	57.99
Math Days Between Testing	-0.108	0.040	-2.73	.007	-0.19	-0.03
Site Type	-5.47	7.30	-0.75	.455	-19.91	8.97

Analysis of Teacher Status

In the previous ANCOVA analysis, which did not include Teacher Status, Site Type did not have a significant effect on Math Change Score after adjusting for covariates. But, as stated previously, Teacher Status was significantly associated with Math Change Score. This motivated further investigation of the interaction between Teacher Status and Site Type with respect to Math Change Score. When examining Math Change Score by Teacher Status within Site Type, some interesting results were found. First, it was discovered that there were no full-time teachers at the community sites. Second, an ANOVA test (Table 12) comparing the means of Math Change Score in

the remaining three groups (campus full-time, campus part-time, and community part-time) revealed a significant difference, $p = .023$.

Table 12

ANOVA for Math Change Score by Groups Defined by Site Type/Teacher Status

<i>Source</i>	<i>SS</i>	<i>df</i>	<i>MS</i>	<i>F</i>	<i>p-value</i>
Between Groups	11,039.79	2	5,519.89	3.86	.023
Within Groups	197,243.96	138	1,429.30		
Total	208,283.75	140			

Post hoc multiple comparison tests showed a significant difference in Math Change Score between Campus Full-time and Campus Part-time, $p = .024$. Math Change Score (mean improvement) for each Site Type by Teacher Status group is shown in Table 13 below. In particular, campus-based students of part-time teachers had a significantly lower change in math score than campus-based students of full-time teachers while students of part-time teachers in the community classes performed fairly well.

Table 13

Multiple Comparison Tests of Math Change Score by Site Type/Teacher Status

<i>Group</i>	<i>N</i>	<i>M</i>	<i>SD</i>
Campus Full-time ^a	50	32.14	32.89
Campus Part-time ^b	55	12.22	42.30
Community Part-time ^{a,b}	36	26.61	36.89

Groups with different letters are significantly different, $p = .024$ (Bonferroni Correction)
 Note: There were no full-time teachers at any of the community sites.

Analysis of Math Days Between Testing

Since Math Days Between Testing was significantly associated with Math Change Score in the ANCOVA analysis, this variable was further examined for differences between the three groups defined by site type delineated by teacher status (campus full-time, campus part-time, and community part-time). Table 14 gives the results of the one-way ANOVA, which was significant. Post hoc multiple comparison tests showed that on-campus students who had full-time teachers had significantly fewer days between math pretest and posttest than those with part-time teachers, $p < .001$. Interestingly, the group with the lowest number of days between testing had the greatest improvement in math score, and the group with the highest number of days between testing had the least improvement. Figure 1 shows the comparison of Math Days Between Testing when grouped by Site Type/Teacher Status.

Table 14

ANOVA for Math Days Between Testing by Site Type/Teacher Status Groups

Source	<i>SS</i>	<i>df</i>	<i>MS</i>	<i>F</i>	<i>p-value</i>
Between Groups	101,901.63	2	50,950.82	8.79	< .001
Within Groups	799,855.69	138	5,796.06		
Total	901,757.32	140			

Figure 1

Comparison of Mean Math Days Between Testing by Site Type/Teacher Status

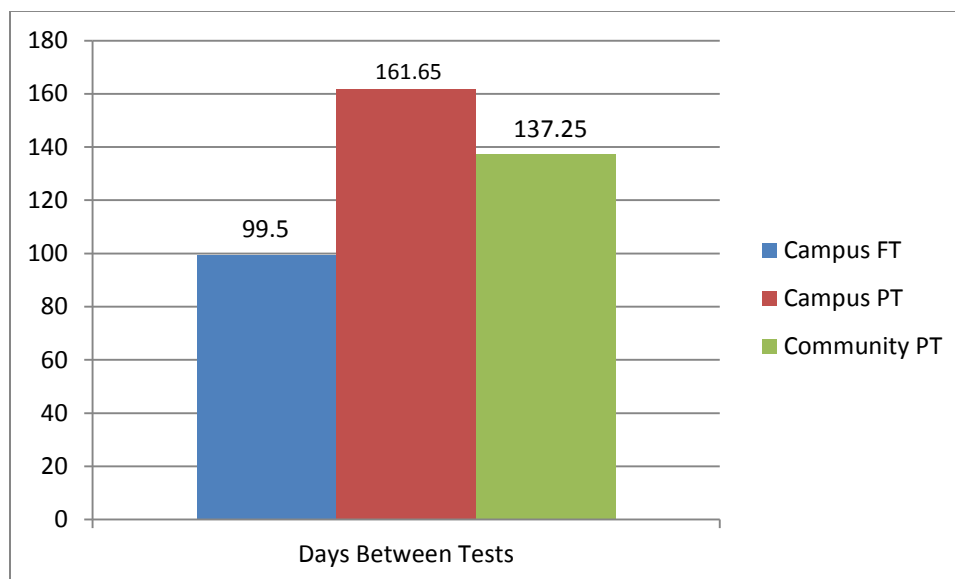


Table 15 shows the comparison of the Math Number of Days Between Testing to Site Type/Teacher Status, i.e., Campus Full-time, Campus Part-time, and Community Part-time.

Table 15

Comparison of Math Days Between Testing by Site Type/Teacher Status

Group	<i>n</i>	Math Days Between Testing
		Mean (SD)
Campus (Full-time)	50	99.50 (58.50)
Campus (Part-time)	55	161.65 (81.47)
Community (Part-time)	36	137.25 (88.44)
Community (Full-time)*	---	-----

*There were no Community Full-time teachers.

Analysis of Years Teaching

Although the students of full-time teachers had greater math improvement than those with part-time teachers, the unique interaction of Site Type with Teacher Status was still puzzling. In particular, mean math improvement for students of part-time teachers of campus-based classes was so much lower than students of part-time teachers of community-based classes (12.22 and 26.61 points, respectively). This difference suggested that there was another factor that may be affecting Math Change Score. This motivated an examination of the effect of teaching experience at Augusta Technical College (in years), which was available in the GALIS database, on Math Change Score in the target population.

Upon examination of mean Years Teaching (defined as the number of years taught at Augusta Technical College in Adult Education) by Site Type (campus vs. community), *t*-test analysis showed that the Years Teaching of teachers in campus-based classes was significantly higher than community-based classes, 7.76 years and 4.47 years, respectively, $t(129) = 4.38, p < .001$. Additionally, when looking at Years Teaching by Teacher Status (full-time vs. part-time), an association was again found where Years Teaching of full-time teachers was significantly greater than part-time teachers, 13.6 years and 3.4 years, respectively, $t(148) = 19.92, p < .001$. The results of further analysis of this factor suggested a possible explanation for the math score outcomes. Figure 2 illustrates how mean Math Change Score corresponded in magnitude to the mean Years Teaching for Campus Full-time, Campus Part-time, and Community Part-time. In other words, the students who had the greatest math improvement had teachers with the highest number of years teaching in adult education at the College. Likewise, the students who

had the least math improvement had teachers with the lowest number of years teaching adult education at the College.

Figure 2

Comparison of Mean Math Change Score and Mean Years Teaching by Site Type/Teacher Status

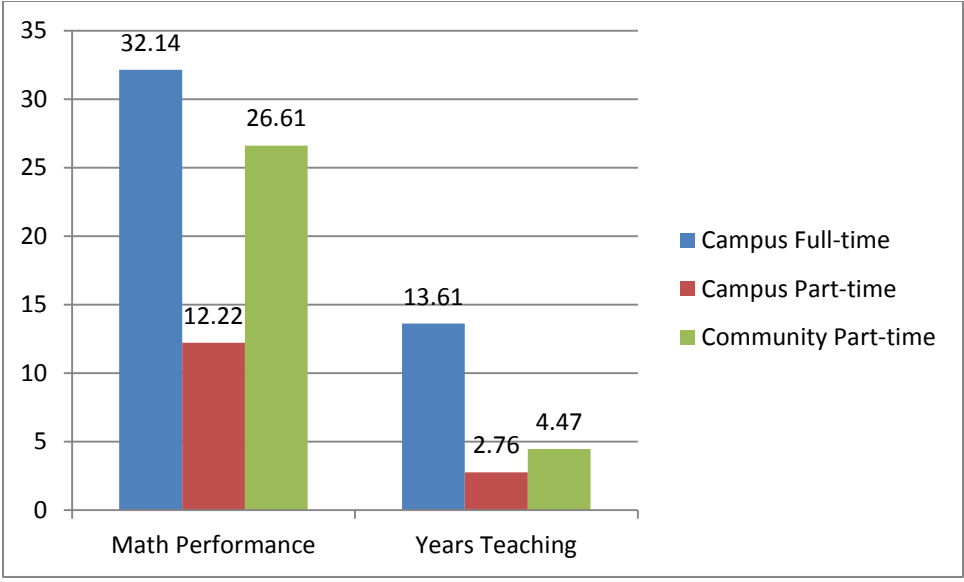


Table 16 below shows the comparison of Math Change Score and Years Teaching to Site Type by Teacher Status, i.e., Campus Full-time, Campus Part-time, and Community Part-time.

Table 16*Comparison of Math Change Score and Years Teaching by Site Type/Teacher Status*

Group	Math Change Score		Years Teaching	
	<i>n</i>	Mean (SD)	<i>n</i>	Mean (SD)
Campus (Full-time)	50	32.14 (32.89)	52	13.61 (3.33)
Campus (Part-time)	55	12.22 (42.30)	61	2.76 (2.54)
Community (Part-time)	36	26.61 (36.89)	37	4.47 (2.99)
Community (Full-time)*	---	-----	---	-----

*There were no Community Full-time teachers.

Summary

Reading Change Score

ANCOVA analysis showed that Site type (campus vs. community) did not have a significant effect on Reading Change Score, even after controlling for effects of Math Pretest Score ($p = .739$). The final model for Reading Change Score included Site Type with Math Pretest Score as a covariate. Math Pretest Score had a positive effect on Reading Change Score ($p = .022$), i.e., students who had a higher math pretest score improved by a greater number of points on their reading posttest than those with a lower math pretest score.

Math Change Score

A preliminary analysis yielded two potential variables that were significantly associated with Math Change Score: Math Days Between Testing ($p = .008$), and Teacher Status (full-time vs. part-time) ($p = .036$). However, an analysis of multicollinearity between the explanatory variables revealed that Teacher Status was highly correlated with Site Type (campus vs. community) ($p < .001$) as well as the Math Days Between

Testing ($p < .001$). Removing Teacher Status addressed the issue of multicollinearity; however, because the status of the teacher played a major role in the Math Change Score, it was examined in a separate analysis.

ANCOVA analysis showed that Site Type (campus vs. community) did not have a significant effect on Math Change Score, even after controlling for effects of Math Days Between Testing ($p = .455$). The final model for Math Change Score included Site Type and Math Days Between Testing as a covariate. Math Days Between Testing had a negative effect on Math Change Score ($p = .007$), i.e., students who had a greater number of days between math testing had less improvement than those students who tested sooner.

Teacher status. When using a new variable, Site Type/Teacher Status (campus full-time vs. campus part-time vs. community part-time) as the factor that defined group comparisons, ANOVA analysis showed that this factor had a significant effect on Math Change Score ($p = .023$). Math Change Score was significantly lower with students taking classes from campus part-time teachers than classes from campus full-time teachers ($p = .024$). No other significant differences were found.

Days between math testing. An interesting finding was that Days Between Math Testing had a direct negative correspondence to Math Change Score with respect to site type/teacher status. In other words, the number of days between testing was the lowest for the group with the greatest math improvement, and the highest for the group with the least math improvement. Overall, students taking classes with campus part-time teachers waited the longest between tests, mean of 161.65 days ($SD = 81.47$), compared to students taking classes with community part-time teachers, mean of 137.25 days ($SD =$

88.44), and the lowest category, students taking classes with campus full-time teachers, mean of 99.50 ($SD = 58.50$) with a significant difference between students of campus-part-time and campus full-time teachers ($p < .001$). The findings suggest the number of days between math testing is associated with Math Change Score, i.e., the greater the number of days between math testing, the less the improvement.

Years teaching. Another interesting finding was the mean points gained between math pretest and posttest corresponded in magnitude to the mean number of years taught for campus full-time teachers, campus part-time teachers, and community part-time teachers. In other words, the students who had the greatest math improvement had teachers with the highest number of years teaching adult education at the College. Likewise, the students who had the least math improvement had teachers with the lowest number of years teaching at the College (See Figure 2).

Questionnaire

When looking at the general data on the individual questions, both question seven in the Student Interest in School section (*I find the class intellectually challenging and stimulating.*) and question 17 in the Teacher Availability section (*My teacher is adequately accessible to students during office hours or after class.*) had the lowest mean value at 4.07. Question 20 in the Academic Self-efficacy sections (*I expect to do well in this class.*) had the highest mean value at 4.48. When looking at the means of the question categories, the same pattern emerged with the Teacher Availability section having the lowest mean question score of 4.19 and the Academic Self-efficacy section having the highest mean question score at 4.39.

None of the statistical tests on the individual items or the question category totals were significant with the exception that females had significantly higher scores on question seven in the Student Interest in School section (*I find the class intellectually challenging and stimulating.*) than males, 4.25 and 3.86, respectively ($p = .018$).

Other General Findings

Students of part-time teachers were found to be significantly older than students of full-time teachers, 30.94 ($SD = 11.84$) and 26.51 ($SD = 8.22$) years, respectively ($p = .010$), and while not significant, females tended to be older than males, 31.04 ($SD = 11.43$) years and 27.25 ($SD = 9.90$) years, respectively ($p = .051$). In addition, females had significantly higher scores on the reading pretest than males, 547.79 ($SD = 53.48$) and 526.96 ($SD = 45.76$), respectively ($p = .029$).

CHAPTER 5

SUMMARY, CONCLUSIONS, AND IMPLICATIONS

Summary

It has been well documented that a person with a high school diploma or GED will have more potential for employment and higher income earnings overall (Bureau of Labor and Statistics, *Employment Projections: Education Pays*, 2011). Even with \$19 million in resources provided by federal support (Dan-Meisser, 2011) and \$170 million provided yearly by the State, over 1.2 million adults in Georgia still live daily without the attainment of a high school diploma or GED (Technical College System of Georgia 2009-2010 Fact Sheet and College Directory). Moreover, these adults will continue with limited gains in skills, knowledge, self-confidence, self-esteem, and responsibility (Kutner et al., 2007). However, the state of Georgia, through organizations such as the 25 colleges in the TCSG, is striving to make a difference by creating options that allow each and every adult citizen lacking a high school diploma or GED the opportunity to receive adult education free of charge.

At Augusta Technical College students have the choice to attend classes embedded on campus with other academic classes or at independent, community-based sites. Evidence is lacking in the literature to support the notion that students taking classes on campus will perform better those taking classes in the community. Therefore, the overarching goal of this study was to determine if there is a difference in academic outcomes between adult education students at Augusta Technical College taking classes in a campus-based environment versus those students taking classes in a community-

based environment. More specifically, this study sought to answer the following two research questions:

1. Is there a difference in academic outcomes, measured by the change in reading TABE scaled scores, between campus-based versus community-based students while controlling for age, sex, race, teacher status (part-time vs. full-time), days between testing, academic self-efficacy, perceived autonomy, student interest in school, teacher availability, and classroom organization?
2. Is there a difference in academic outcomes, measured by the change in math TABE scaled scores, between campus-based versus community-based students while controlling for age, sex, race, teacher status (part-time vs. full-time), days between testing, academic self-efficacy, perceived autonomy, student interest in school, teacher availability, and classroom organization?

Student demographics, location of classes (campus vs. community), and teacher status (full-time vs. part-time) were obtained. In addition, students completed a questionnaire to measure their perceptions of autonomy support, academic self-efficacy, student interest in school, teacher availability, and classroom organization, which were considered as potential covariates. ANCOVA was used to analyze the effect of site type on reading and math academic change score while controlling for covariates. A model with appropriate predictors for each outcome (TABE scaled score change in reading and math) was determined.

Analysis of Research Findings

The purpose of this study was to determine if site type, campus versus community, had a significant influence on reading and/or math academic achievement. The following outlines several key findings related to this objective.

First, there was not a statistically significant difference in reading achievement between students taking classes at a campus-based site versus a community-based site. However, students who had a higher math pretest score improved by a greater number of points on their reading posttest than those with a lower math pretest score. Second, there was not a statistically significant difference in math achievement between students taking classes at a campus-based site versus a community-based site. However, students who had a higher number of days between math pretest and posttest tended to have less improvement on their math posttest than those with a lower number of days between testing. In other words, as the number of days between math testing increased, math improvement decreased.

When examining teacher status within site type, the change in math score was significantly lower from students taking classes from campus part-time teachers than students taking classes from campus full-time teachers. In addition, students who had the greatest math improvement had teachers with the highest number of years teaching at the College and, conversely, the students who had the least math improvement had teachers with the lowest number of years teaching at the College. Lastly, all questions on the questionnaire were positively skewed indicating that students attending classes at the College rated their experience highly in all categories. The lowest scored question and

section total was concerning teacher availability and both the highest scored question and section total was concerning academic self-efficacy.

Discussion of Research Findings

Several studies related to variables that impact academic achievement were noted in the review of literature section of this paper. This section will compare some the results of those research studies with the results from this research project.

One early research study by Harman (1983) found that adult education students were more likely to be older females. An additional study during the same period by Watson (1983) found that older adult education students were more likely to achieve academically and persist. An even later study by Sticht (2002) that found that males were less likely to enroll in an adult education class, or persist if enrolled. The students in this study included more females (55%) than males (45%), and the mean age of all students was approximately 29 years. While not significant, females in this study were older than males. The sex and age distributions in this study are typical based on the literature by Harman (1983), Watson (1983), and Sticht (2002). While females had significantly higher reading pretest scores, over 20 points more than males, there was no significant difference between the sexes in actual change in TABE scale scores in either reading or math once enrolled at the College. Therefore, results of the study concerning the influence of age and sex on academic achievement were inconclusive. Rather, the results better support research of Blecher et al. (2002), who found that the relationship between age and academic persistence was so inconsistent that one would find it difficult to state a known causality. Like Blecher et al., the researcher of this study suggests that more

studies be conducted to determine the relevancy of demographic findings to academic outcomes in adult literacy education.

Questionnaire

Surprisingly, the questionnaire data provided few findings to support or refute the related studies mentioned earlier. However, there were a few significant results that were noteworthy. Students gave relatively high ratings to all items (academic self-efficacy, autonomy support, student interest in school, teacher availability, classroom organization) on the questionnaire. This was a positive indicator as other researchers also have linked these qualities with academic achievement (Deci, Koestner, & Ryan, 1999; Jonson-Reid et al., 2005; McInerney, Dowson, Yeung, & Nelson, 2005; Vermeulen & Schmidt, 2008; Yong, 2005).

For question seven in the student interest in school section (*I find the class intellectually challenging and stimulating.*), females had significantly higher scores than males. Sticht (2002) found that men are less likely to enroll in adult literacy programs or to show up if they actually do enroll. This could indicate a difference in the internal motivation between males and females. This may also be a reason that more females than males attend adult education programs (Sticht; Harmon, 1983). Even though other researchers (Tinto, 1983; Tinto & Pusser, 2006) have determined that a student's lack of integration into the classroom can influence persistence and retention, there is still a gap in the literature as to the clear understanding of why fewer males attend adult education classes than females. Comings, Parella, and Soricone (1999) determined that demographic classifications such as age, sex, or race were inadequate at the time to determine the best methods to help adult education students perform better academically.

Methods should be incorporated at the College that specifically target male students in achieving academic success. Moreover, these methods should be assessed to determine their effectiveness in producing a positive outcome in student academic achievement.

Even though all questions were highly rated, question 17 (*My teacher is adequately accessible to students during office hours or after class.*) from the teacher availability section, had the overall lowest mean score, which mirrored the total mean score for the same section, the lowest section overall. One possible explanation for the lower scores in the area of teacher availability is the large number of part-time teachers in the adult education department. Due to budget restrictions, each of these part-time teachers is employed for a specific number of hours for classroom time only without additional time specifically designated for student advisement or other student interactions. Even though some teachers at the campus sites have shared office space available, the teachers at the off-campus sites are only able to use the facilities during the open hours of class. This inability to provide additional hours to support students is a shortcoming based on the early findings of McNerny, Dowson, Yeung, and Nelson (2005) that student interest in schoolwork and academic achievement is impacted by the direct support they receive from their teachers.

Interestingly, the academic self-efficacy section had the highest mean score. Academic self-efficacy is an individual's belief that they can be successful on an academic task or can attain a specific goal (Jonson-Reid et al., 2005; Zimmerman, 1995). Question 20 (*I expect to do well in this class.*) had the overall highest mean score, and mirrored the total mean score for the same section, the highest scored section on the questionnaire overall. While no conclusive relationship can be found to any of the other

study variables, the findings in this study demonstrate that adult education students in this target population tended to have a high level of self-efficacy while enrolled in adult education classes. The College should consider methods to capitalize on this finding to better nurture the students' belief in their academic abilities.

Academic Change Score

When looking at the findings for academic achievement, students taking a class from a campus full-time teacher had almost three times and increase in math TABE scaled score as students taking a class from a campus part-time teacher. In addition, students of community part-time teachers had more than a two-fold increase in math TABE scaled score as students of campus part-time teachers. In other words, students taking a class from a campus part-time teacher had the worst academic achievement in math. One would have thought that students taking classes from campus part-time teachers would have performed somewhat better given the students' close proximity to campus resources such as the library and college-related social events. Tinto (1993) found that students who incorporate into the intellectual and social life of the institution tend to do better academically.

The finding in this study suggests that something hindered math achievement in the campus part-time student group. Since math improvement was lower in students who attend classes on campus with part-time teachers, there may be differences not yet determined in the three class types (campus full-time, campus part-time, and community part-time) that may explain the discrepancy in math score change. Based on the literature, environmental factors such as lighting and (Shavelson, Hubner, & Stanton, 1976), classroom organization (Brooks, 2010; Shavelson, Hubner, & Stanton), and

supportive or non-supportive learning environment (Vermeulen & Schmidt, 2008) could impact student achievement. Also, ambiance, climate, teaching styles, learning support, and facilities are related to the well-being and motivation of students and may have an effect on math achievement according to previous studies (Butler & McNeely, 1987; Deci, Koestner, & Ryan, 1999; Deci, Schwartz, Sheinman, & Ryan, 1981; McInerny, Dowson, Yeung, & Nelson, 2005). Further studies should assess and compare classes with respect to these factors.

Math Days Between Testing and Years Teaching

An interesting relationship was found between math days between testing and math improvement. The average number of days between math testing at campus full-time, community part-time, and campus part-time sites were 99.5, 137.25, and 161.25 days, respectively; this corresponded (negatively) in magnitude to math improvement in the three comparison groups, 32.14, 26.61, 12.22 points, respectively. More specifically, it appears from the findings that more days between math testing leads to the worst improvement in math TABE scaled score, whereas, less days between math testing leads to the best improvement in TABE scaled score. Currently at the College, there is no mandatory limit for the number of days a student can wait to take a posttest in any academic area. It is up to the individual teacher and student to determine when to posttest once they have met the minimum 40 hour benchmark from the last test session. The reasons for delaying math testing in this target population are unclear and need further investigation. While students have a choice on when to posttest, they may lack the drive to do so. Teachers and learning environment can play a role in motivating the student in this area. Deci and Vansteenkiste (2003) found that innate psychological needs

drive individuals to be proactive with their potential, growth, development, and integrated functioning. The authors also stated that actualization of an individual's potential may need nurturing from their social environment. Therefore, either the internal drive of the student or the nurturing push from the teacher, or a combination of both, may influence the number of days between math testing. Better understanding of delayed testing in math could lead to the development of different scheduling scenarios that would allow for more control over the posttest timing or more training for the faculty in recognizing the importance of this factor. Future study should consider the most optimal scheduling patterns for testing and the influence of both the student and faculty decisions in delayed math testing.

Upon further investigation for an explanation of the disparity in math improvement for the three comparison groups, it was determined that the number of years teaching in adult education at the College was an important factor to consider. In particular, this study revealed that more years teaching at the College is associated with greater math improvement in the student. The average number of years at the College for campus full-time, community part-time, and campus part-time teachers was 13.61, 4.47, and 2.76, respectively; this corresponded (positively) in magnitude to math improvement in the three comparison groups, 32.14, 26.61, 12.22 points, respectively. The group with the greatest math improvement (campus full-time) had teachers with more than three times the teaching experience, on average, of community part-time teachers (13.6 vs. 4.47 years, respectively) and almost five times, on average, of campus part-time teachers (13.76 vs. 2.76 years, respectively). While Butler and McNeely (1987) determined that well-qualified staff in a classroom can make a difference in student outcomes, there is a

gap in the literature as to the minimum amount of years teaching math in adult education that provides optimal student academic achievement. However, mentoring teachers with less experience could help address the disparity in math achievement in the target population.

Conclusions

Reading Change Score

With respect to the main research question, site type does not have a significant effect on the score change in reading, even after controlling for covariates. In other words, there was no significant difference in reading improvement for students on campus versus those at community sites. Interestingly, math pretest scores had a positive effect on reading score achievement. The reason for this relationship is unknown and warrants further investigation.

Math Change Score

With respect to the main research question, site type alone does not have a significant effect on the score change in math, even after controlling for covariates. In other words, there was no significant difference in math improvement for students on campus versus those at community sites. However, site type does have an impact on the score change in math when considering its interaction with teacher status. In other words, there was a difference in math improvement between site types, if teacher status is considered. In particular, students of part-time teachers had more improvement in math at community sites. It is unclear if students of full-time teachers at the community sites would have done better since there were no full-time teachers at the community sites in this study population. Finally, students with a smaller number of days between math

pretest and posttest had more math improvement than those who had more days between pretest and posttest assessments.

Upon further investigation of the factors related to math achievement, several interesting results were discovered. First, it was noted that math improvement for students of campus full-time teachers was greater than those of community part-time teachers, which was greater than those students of campus part-time teachers. Interestingly, the number of years teaching for the instructors corresponded to the students' change in math score in the three comparison groups. The average number of years teaching in the three comparison groups, from greatest to least, corresponded in magnitude to the math change score, with students who had the most math improvement having teachers who had the most experience and students who had the least math improvement having teachers who had the least experience. This relationship, which was not found in reading, suggests that teacher experience may be an important factor in student math achievement. Also noteworthy, the average number of days between testing (pretest to posttest) in the three comparison groups corresponded negatively to math improvement, with students who had the least number of days between testing having the greatest improvement in math, and those with a greater number of days between testing having the least improvement. This result implies that longer periods between testing could have a negative influence on math improvement.

Questionnaire

Although the students tended to score all items on the questionnaire highly, none of the items or categories on the questionnaire were associated with the change in math score. This suggests that the areas measured by the questionnaire did not have an impact on student academic achievement, in general. The highest-rated questionnaire category was Academic Self-Efficacy which suggests that the students had confidence in their own abilities to handle the coursework. The lowest-rated questionnaire category (Teacher Availability) was still relatively high, indicating that the students perceived that the teachers were available most of the time.

Implications

With respect to the change in reading score, students with higher math pretest scores tended to have higher improvement on their reading posttest. This suggests that these students may have weaknesses related to math that may hinder improvement in reading. With respect to the type of class, the results suggest that students who attend community-based classes have greater math improvement than those who attend campus-based classes, if the teachers are part-time. It is unknown if site type has this effect on the change in math score for students of full-time teachers, since there were no full-time teachers at the community sites. However, the results imply that community-based classes may have an advantage over campus-based classes. Differences in the two class types should be explored for possible explanations for the discrepancy in math score change. Another area that warrants investigation is determining why prolonging the number of days until posttest is detrimental to the change in math score. A possible way to address this is to limit the time period between testing. Finally, the result of years

teaching positively impacting student math performance suggests that math instruction improves with experience. A possible way to address the negative influence associated with instructors with fewer years teaching is to better mentor teachers with less experience. As a result of this study, new procedures will be implemented at the College to better orient new part-time teachers at the campus locations. In addition, faculty development will be provided that will focus on the results of this study and potential solutions to increase student achievement in math.

Recommendations

1. Teachers should be aware that students who have a lower math pretest score and a lower interest level are at risk for less improvement in reading TABE scaled scores from pretest to posttest. These students should be monitored more closely and encouraged often between testing periods. Teachers should also be cognizant of the fact that delaying math testing may have a negative impact on improvement.
2. Teachers with the least number of years teaching should be mentored by those with more experience with respect to math education.
3. Administration should determine if the College is optimizing scheduling and support resources for part-time faculty.
4. Classes of part-time teachers at campus sites versus community sites should be assessed and compared to determine any differences in the educational experience that may contribute to those students at community sites performing better in math. In particular, attention should be given to determining what factors in campus classes with part-time teachers may contribute to lower student achievement than in the other

- two class settings (campus with full-time teachers and community with part-time teachers).
5. Factors such as lighting, seating arrangements, control of learning space, and supportive or non-supportive learning environments should be explored in the adult literacy education population as the literature states that these factors may influence student achievement.
 6. Factors such as ambiance, climate, teaching styles, learning support, and facilities should be explored in the adult literacy education population as the literature states that these factors may influence the well-being and motivation of students.
 7. The instrument for this study should be analyzed more thoroughly for use in other studies that may look at academic performance. It appeared that students generally chose scores on the higher end of the five-point Likert scale, which could indicate a failure in the design of the instrument to detect a difference in the variables of interest. However, the instrument may actually be sound and reflect the true consensus of the target population. It could be that an increase in the number of study subjects would have made an impact on the instrument's ability to detect a difference.
 8. Further studies should explore why fewer male students participate in adult education programs at the College than female students. Even more specifically, the relationship of age, sex, and race to motivation, academic performance, retention and persistence toward gaining a GED needs to be examined further.
 9. Further study needs to be conducted to determine if the academic environment, in particular site type (campus vs. community), has an impact on other areas of study in

adult education at the College. This includes the areas of language and English as a Second Language (ESL).

Dissemination

Several possibilities exist for dissemination of the research findings. First, the dissertation will be electronically published in Georgia Southern University's electronic dissertation database. Second, findings will be presented to the President of Augusta Technical College, the Director of Adult Education, and eventually the faculty. This will provide an opportunity for discussion of implications of the findings with stakeholders at the College. Third, dissemination will include a plan to present the results in a formal presentation at the Technical College System of Georgia's (TCSG) yearly Adult Education Conference. The conference provides a broad audience of adult education leadership and faculty from TCSG's State offices and the 25 colleges currently within the system. Lastly, to reach a broader audience of adult learner educators, the research will be presented to a peer review journal for publication. One of the leading journals that will be considered is the *Journal of Adolescent & Adult Literacy (JAAL)*. The journal is a peer-reviewed publication that provides the opportunity to present scholarly research or practice-based information to other researchers, teachers, and administrators committed to the instruction of literacy learners ages 12 and older. One additional refereed journal that is a possibility is the *Adult Education Quarterly (AEQ)*. The *AEQ* is a refereed journal published quarterly that is committed to advancing overall understanding as well as the practice of both adult and continuing education.

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INSTRUCTIONS

The following questions ask about your experience in class and how you feel about your classes in adult education. There are no wrong or right answers, just answer as accurately as possible.

- 1. Circle the number that best describes your agreement or disagreement with the statement.**
- 2. Answer all questions only ONCE. If you change your mind, X out the wrong answer and circle the correct answer.**

[NB: sub-scale indicators were removed from the survey prior to administration of the survey]

1.	I feel my teacher provides me choices and options. Autonomy Support Learning Climate Questionnaire (LCQ)	1 Strongly Disagree	2 Disagree	3 Neutral	4 Agree	5 Strongly Agree
2.	I feel understood by my teacher. Autonomy Support Learning Climate Questionnaire (LCQ)	1 Strongly Disagree	2 Disagree	3 Neutral	4 Agree	5 Strongly Agree
3.	My teacher lets me know they have confidence in my ability to do well in the class. Autonomy Support Learning Climate Questionnaire (LCQ)	1 Strongly Disagree	2 Disagree	3 Neutral	4 Agree	5 Strongly Agree
4.	My teacher encourages me to ask questions. Autonomy Support Learning Climate Questionnaire (LCQ)	1 Strongly Disagree	2 Disagree	3 Neutral	4 Agree	5 Strongly Agree
5.	My teacher listens to how I would like to do things. Autonomy Support Learning Climate Questionnaire (LCQ)	1 Strongly Disagree	2 Disagree	3 Neutral	4 Agree	5 Strongly Agree

6.	My teacher tries to understand how I see things before suggesting a new way to do things. Autonomy Support Learning Climate Questionnaire (LCQ)	1 Strongly Disagree	2 Disagree	3 Neutral	4 Agree	5 Strongly Agree
7.	I find the class intellectually challenging and stimulating. Student Interest in School SEEQ Learning/Value Subscale	1 Strongly Disagree	2 Disagree	3 Neutral	4 Agree	5 Strongly Agree
8.	I have learned something which I consider valuable. Student Interest in School SEEQ Learning/Value Subscale	1 Strongly Disagree	2 Disagree	3 Neutral	4 Agree	5 Strongly Agree
9.	My interest in the subject has increased because of this class. Student Interest in School SEEQ Learning/Value Subscale	1 Strongly Disagree	2 Disagree	3 Neutral	4 Agree	5 Strongly Agree
10.	I have learned and understood the subject materials of this class. Student Interest in School SEEQ Learning/Value Subscale	1 Strongly Disagree	2 Disagree	3 Neutral	4 Agree	5 Strongly Agree
11.	The teacher's explanations are clear. Classroom Organization SEEQ Organization/Clarity Subscale	1 Strongly Disagree	2 Disagree	3 Neutral	4 Agree	5 Strongly Agree
12.	The course materials are well prepared and carefully explained. Classroom Organization SEEQ Organization/Clarity Subscale	1 Strongly Disagree	2 Disagree	3 Neutral	4 Agree	5 Strongly Agree

13.	The Student Educational Plan agreed with material actually taught so I know where the class was going. Classroom Organization SEEQ Organization/Clarity Subscale	1 Strongly Disagree	2 Disagree	3 Neutral	4 Agree	5 Strongly Agree
14.	My teacher is friendly towards individual students. Teacher Availability SEEQ Individual Rapport Subscale	1 Strongly Disagree	2 Disagree	3 Neutral	4 Agree	5 Strongly Agree
15.	My teacher makes students feel welcome in seeking help or advice in or outside of class. Teacher Availability SEEQ Individual Rapport Subscale	1 Strongly Disagree	2 Disagree	3 Neutral	4 Agree	5 Strongly Agree
16.	My teacher has a genuine interest in individual students. Teacher Availability SEEQ Individual Rapport Subscale	1 Strongly Disagree	2 Disagree	3 Neutral	4 Agree	5 Strongly Agree
17.	My teacher is adequately accessible to students during office hours or after class. Teacher Availability SEEQ Individual Rapport Subscale	1 Strongly Disagree	2 Disagree	3 Neutral	4 Agree	5 Strongly Agree
18.	I am confident I can understand the basic concepts taught in this class. Academic Self-efficacy MSLQ Motivations Subscale	1 Strongly Disagree	2 Disagree	3 Neutral	4 Agree	5 Strongly Agree

19.	I am confident I can do an excellent job on the assignments and tests in this class. Academic Self-efficacy MSLQ Motivations Subscale	1 Strongly Disagree	2 Disagree	3 Neutral	4 Agree	5 Strongly Agree
20.	I expect to do well in this class. Academic Self-efficacy MSLQ Motivations Subscale	1 Strongly Disagree	2 Disagree	3 Neutral	4 Agree	5 Strongly Agree
21.	Considering the difficulty of this class, the teacher, and my skill, I think I will do well in this class. Academic Self-efficacy MSLQ Motivations Subscale	1 Strongly Disagree	2 Disagree	3 Neutral	4 Agree	5 Strongly Agree

APPENDIX B

GEORGIA SOUTHERN INSTITUTIONAL REVIEW BOARD APPROVAL

Georgia Southern University Office of Research Services & Sponsored Programs		
Institutional Review Board (IRB)		
Phone: 912-478-0843		Veazey Hall 2021
Fax: 912-478-0719	IRB@GeorgiaSouthern.edu	P.O. Box 8005 Statesboro, GA 30460

To: Charles Hall
Dr. Teri Melton

CC: Charles E. Patterson
Vice President for Research and Dean of the Graduate College

From: Office of Research Services and Sponsored Programs
Administrative Support Office for Research Oversight Committees
(IACUC/IBC/IRB)

Initial Approval Date: 12/16/11

Expiration Date: 06/30/12

Subject: Status of Application for Approval to Utilize Human Subjects in Research

After a review of your proposed research project numbered H12156 and titled "Factors Associated with Adult literacy Student Outcomes in Campus-Based Versus Community- Based Programs." it appears that (1) the research subjects are at minimal risk, (2) appropriate safeguards are planned, and (3) the research activities involve only procedures which are allowable. You are authorized to enroll up to a maximum of 300 subjects.

Therefore, as authorized in the Federal Policy for the Protection of Human Subjects, I am pleased to notify you that the Institutional Review Board has approved your proposed research.

If at the end of this approval period there have been no changes to the research protocol; you may request an extension of the approval period. Total project approval on this application may not exceed 36 months. If additional time is required, a new application may be submitted for continuing work. In the interim, please provide the IRB with any information concerning any significant adverse event, **whether or not it is believed to be related to the study**, within five working days of the event. In addition, if a change or modification of the approved methodology becomes necessary, you must notify the IRB Coordinator **prior** to initiating any such changes or modifications. At that time, an amended application for IRB approval may be submitted. Upon completion of your data collection, you are required to complete a *Research Study Termination* form to notify the IRB Coordinator, so your file may be closed.

Sincerely,



Eleanor Haynes
Compliance Officer

APPENDIX C
CONSENT FORM



COLLEGE OF EDUCATION

**DEPARTMENT OF LEADERSHIP, TECHNOLOGY, AND HUMAN
DEVELOPMENT**

INFORMED CONSENT

1. My name is Charles (Rick) Hall and I am currently a graduate student at Georgia Southern University. I am conducting this research as a requirement for a doctorate degree in Higher Education Administration.
2. The purpose of this research study is to determine if there are differences in students who attend adult education classes on-campus versus those who attend classes off-campus. The primary area I will be comparing is academic Change Score.
3. You will be asked to complete a 21-question survey to determine your beliefs about your current enrollment in adult education classes at the school. With your permission, information will be obtained about you and your testing history since attending Augusta Technical College from the College's database system. This information will then be compared. At no time will you be identified to others and your information will be secured with the highest degree of confidentiality.
4. There are no known risks to participating in this research. Yet, there is a potential that some of the questions on survey may cause some to feel some slight concern or anxiety. The questions have been used on hundreds of research projects in the past and there are no documented cases of harm from answering the questions.
5. There are no known benefits to you directly from participating in this study. Rather, the results may benefit adult literacy education and how it is delivered at colleges throughout the state.
6. The research study will only involve the time to complete the consent form and the time to take the survey. It is expected that no more than 20 minutes will be necessary to complete all forms. You will not be contacted in the future unless there is a need to briefly touch base with you to clarify information. However, this is not expected.

7. Only the researcher will have access to the final information obtained. This information will be maintained in a secure location. All reference numbers such as student ID number and social security number will be removed from any data files other than a secure file that will be saved by the researcher for referencing data during the analysis stage. The data will be maintained in a secure location for a minimum of 3 years following completion of the study at which point it will be discarded.
8. You have a right to ask questions and have those questions answered. If you have questions about this study, please contact the researcher named above or the researcher's faculty advisor, whose contact information is located at the end of the informed consent. For questions concerning your rights as a research participant, contact Georgia Southern University Office of Research Services and Sponsored Programs at 912-478-0843.
9. There is no compensation for participating in this study.
10. You do not have to participate in this research and you do not have to answer any questions you feel uncomfortable answering. If you start participating in the study, you may end your participation at any time by telling the person in charge or by not returning the survey.
11. There is no penalty for deciding not to participate in the study and you may decide at any time that you do not want to participate further and may withdraw without penalty or retribution.

You must be 18 years of age or older to consent to participate in this research study. If you consent to participate in this research study and to the terms above, please sign your name and indicate the date below.

You will be given a copy of this consent form to keep for your records.

Principal Investigator	Faculty Advisor
Charles Richard Hall, Sr. 902 Sedgefield Circle Grovetown, GA 30813 706-771-4020 (work) chall@augustatech.edu	Teri Denlea Melton, Ed.D. Room 3115, College of Education P.O. Box 8131 Department of Leadership, Technology, and Human Development Georgia Southern University Statesboro, GA 30460-8131 (912) 478-0510 tamelton@georgiasouthern.edu

Title of Project: Factors Associated with Adult Literacy Student Outcomes in
 Campus-based versus Community-based Programs.

Georgia Southern University

Participant Signature

Date

I, the undersigned, verify that the above informed consent procedure has been followed.

Investigator Signature

Date