Investigating the Effects of Agricultural Education on Student Achievement among Students in Tift County High School: A Quantitative Study

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Abstract

The purpose of this study was to examine the effect of a single Agricultural Education program on the achievement of its students. The program was the Agricultural and Environmental Sciences Career Academy housed in the Tift County High School in Tifton, Georgia. The study examines what the students and graduates perceive as the pros and cons to this unique program. This study was to investigate the effects of agriculture classes on student achievement in terms of enrollment, including the number of students who passed a course, and of mastering course-learning objectives. In this study, the Georgia High School Graduation Test (GHSGT) score and academic transcripts were used to measure the differences in Agricultural Education students and other students in the school based on diploma preference such as College Preparatory or Technical/Career Preparatory. Moreover, the study utilized student surveys to determine the accomplishments of students who had completed an Agricultural Education program within the past ten years. The use of quantitative research with a quasi-mixed method approach for this research was to not only determine student achievement as it relates to academic standards, but also relate it to student achievement as being successful in the real world.

Acknowledgments

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List of Abbreviations

CDE	Career Development Event
AES	Agricultural Environmental Science
FFA	National FFA Association
SAE	Supervised Agricultural Experience
GHSGT	Georgia High School Graduation Test
NCLB	*No Child Left Behind*
CTSO	Career and Technical Education Student Organization
NCES	National Center for Educational Statistics
USDE	United States Department of Education
AHSGE	Alabama High School Graduation Exam
ABAC	Abraham Baldwin Agricultural College

CHAPTER I

INTRODUCTION

This section will introduce the Tift County Agricultural and Environmental Sciences (AES) Career Academy at Tift County High School. It will also provide the basis for a study concerning this program and the affect that the program has on student achievement.

Background and Settings

Improving student achievement is the core of our educational system. Examining this issue is as old as education itself; yet, it is essential to making strides in our learning progression. "Assessments designed to measure student progress are the basis to encourage overall student performance" (Herrick, 1996, p. 20). Hence, student achievement is often measured in terms of testing. Thorndike (1901) found that student achievement could be measured through intelligence tests. Additionally, Thorndike created specific scales to measure basic-skills achievement. This illustration suggests that measuring student achievement is not a new problem in education but rather one that is ongoing and demands constant attention. Therefore, student achievement is perpetual in guiding the educational progress of students and teachers alike (Cook, 2013). In recent years, education has carried an encumbered task of facing responsibility that has in general been burdensome to the educational process as a whole. From this, research evolved to combine and measure theory and practice in meeting the individual needs of students (Marzano, Waters, & McNulty 2005). From this movement, criteria were developed to guide students and instructors in the goal of preparing students for national and international commerce (Strong, Silver & Perini, 2001). In general, schools are seeking means to keep students focused for the goal of high school completion. Moreover, educators depend on researches that focus on teaching methods and regimens to boost student achievement. From researchers, Hood (2004),

and Fritts & Tomlanovich (2001), our school systems have too many students that leave high school that are not prepared to integrate into the workforce.

In the greater scheme of things, the burden is upon administrators to articulate and execute strategies that aim at meeting the needs of all students in the goal of readying them for post-secondary studies and the workforce. Recently, the focus of school improvement, undertaken by school systems from national incentives, is to improvement student success and workforce integration for students in lower performing, high poverty areas. (Kemple, Herlihy, & Smith, 2005; Southern Regional Education Board [SREB], 1998).

In retrospect, success of the individual student can be evaluated by two viewpoints. First, achievement can be assessed by examining the number of students that successfully complete a course with a passing numeric score. Or, another viewpoint in this spectrum can be an examination of whether the student has gained mastery of the skill or objective of the course (Florida State University, 2002). Still others believe that the ultimate view of student achievement is preparing them for future success within a chosen career. Agricultural Education stands as a collaborator with academics to enhance all of these forms of student achievement (Dailey, Conroy, & Shelley-Tolbert, 2001).

The Agriculture Education program at Tift County High School has taken measures to be this sort of collaborator. It is a unique and highly-evolved program in the state of Georgia. Moreover, Tift County School System strives to aid students in their achievement and to become productive members of the community after graduation. This school system not only employs the typical Agricultural Education program, agricultural classes, supervised agricultural experience projects and FFA involvement, but also has an added program within the school known as the Agricultural and Environmental Sciences (AES) Career Academy. This program is dedicated to

student achievement while in school and after graduation (Cook, 2013).

The AES Academy is composed of a group of students interested in Agriscience. The students must complete an application while in the tenth grade and submit it to the department head for consideration. Once accepted, the students are enrolled in the AES Academy for their junior and senior years of high school. Together, they take academic and Agricultural Education courses. Each student is required to be an active member of the FFA and earn their State FFA Degree by the end of their senior year (Cook, 2013). According to the Georgia FFA Association the Georgia State FFA Degree requires a member to accomplish the following activities:

1. Must have the Chapter FFA Degree and have been an active member for at least the immediate past 24 months.
2. Must have satisfactorily completed the equivalent of at least two years (360 hours) of agricultural education or completed the agricultural education program at or above the ninth grade level which includes a Supervised Agricultural Experience Program.
3. Have earned and productively invested at least $1,000 or worked 300 hours in excess of scheduled class time, or a combination thereof, in a supervised agricultural experience program.
4. Have participated in at least 25 hours of community service, comprised of at least two separate activities.
5. Demonstrate leadership ability by:
    A. Performing 10 procedures of parliamentary law
    B. Giving a six-minute speech on a topic relating to agriculture or the FFA
    C. Serving as an officer, committee chairperson, or participating member of a chapter committee

6. Have a satisfactory school scholastic record of "C" or better as certified by the advisor or principal or superintendent.
7. Have participated in the planning and completion of the chapter program of activities.
8. Have participated in at least five different FFA activities above the chapter level (Georgia FFA Association, 2013, p. 1).

AES Academy members are further required to apply to at least three different colleges or institutions, a National FFA Scholarship, and the local Tift County High School scholarships (Cook, 2013). Since these students are fully involved in the Agricultural Education program, the Tift County Agricultural Education department was chosen as the subject for this mixed method study.

Statement of Problem

A major concern of all educators is student achievement. Educators want to make sure that their students succeed on the standardized test as well as being successful after they graduate. Student achievement has been the reason for education since the beginning of what was once the British Colonies in America. The forebear of the public (common) school movement, Horace Mann worked toward the goal of every child receiving a rudimentary instruction (Pinto, 2013).

As education in the United States developed, so too has accountability when referring to the long term success of the student; parameters that define student success have been refined to individual performance, attendance and graduation rates. In developing the goals and mission of public education, all populations of the system must be included in order for the system to be successful. School systems are faced with the task of developing programs that meet the needs of all students for the transition to secondary and post-secondary education (Parker, 2001).

The basic premise of an educator is to influence students and motivate them to do the best

that they possibly can. Educators are driven to ensure that when students leave their classes that they are ready to go to the next level, whether pursuing a career or continuing higher level of education (Cook, 2013). Therefore, there must be a measurement of student achievement. There are several ways educators can measure student achievement and gain information on the student's progress. Such measures as standardized testing, including End of Course Tests (EOCT), High School Graduation Tests, College Entrance Exams, etc. are indicators of how the student has progressed both individually and as a group. The other measure is by observing what the student accomplishes after high school graduation by tracking the progress of the student (Cook, 2013). As our educational system has evolved utilizing funds from state and federal agencies, educators must strive to make sure that students succeed in order to meet funding requirements.

In compliance with the *No Child Left Behind* (NCLB) Act of 2001, educators were pushed to the forefront of education and must stay up to date on not only in subject matter but also the best pedagogy. Teachers cannot afford to simply teach the students the test. Instead, they must teach their students critical thinking skills that will allow the students success beyond the classroom. Educators were required to not leave any student in the dark; they must strive to give the best possible education to each and every student in their classrooms. For this goal to be accomplished, teachers must make sure that they have the attention of each and every student in the classroom. Thus, researchers are continuously providing new methods of teaching and trying to motivate students so that they can achieve at the highest level possible (Golden, 2014).
The AES academy is unique in that is focused on delivering a high-quality education with many academic disciplines in an interdisciplinary curriculum in a special setting. It is distinctive in that aspect; however, it closely parallels another model that we see in many school systems today, the

ninth grade academy. The ninth-grade is the beginning of the students' high school years and has become a focus of both teachers and researchers. The student at this age is facing many changes that will impact their future. Namely, they are changing physically, emotionally, and intellectually. These changes become a part of who they are and how they will navigate life. This age group requires intense consideration from their parents, mentors and teachers to transition them into secondary and post-secondary studies as well as into the workforce.

In like fashion, the AES is there to help transition the junior and senior high school student into postsecondary studies by fostering some of the same insecurities that the ninth grade student faces in their transition. In like fashion, the AES is there to help transition the junior and senior high school student into postsecondary studies by fostering some of the same insecurities that the ninth grade student faces in their transition to post- secondary studies. It is during this time in the students' life that they often haves fears of inadequacy and are easily intimidated. AES is an environment that fosters diversity and welcomes all that are willing to become a part of the agriculturally based environment. Researchers, Lounsbury & Johnston (1985), reported that there was an incongruity in school regulations and procedures in ninth grade students evolving needs. Which would lead one to believe that the mismatch is a contributor to the student's inability to adjust and thrive. Wheelock (1993) reported likewise that the ninth-grade student was susceptible to adverse conditions that would have a profound negative impact on their future which can be characterized by hostility toward peers and adults.

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The AES Academy focuses on student growth in soft skills area to prepare students for real life events for success; thus, it is a catalyst for educating the student and meeting individual needs. This innovation is based on the design of the ninth grade concept. The agricultural education students, are segregated from the remaining high school students so that the strategies, many of which are developed from middle school can be applied in a setting that is welcoming to the student. Black, K. (2002) advocated for special environments that would provide flexibility and provide for both the physical and cognitive developmental needs of the student. The AES academy likewise provides flexibility in the curriculum so that the individual needs of the student's interest are met. Moreover, Black, S. (2004) concurred that the notion of segregating ninth grade students is advantageous in constructing social acceptance and is key to developing positive interactions among students. In like fashion, isolation also helps the AES Academy in that it fosters an interest of like-minded students and provides a setting that is conducive to hands-on learning. In comparison, both the ninth grade academy concept and the AES are focused on increasing student achievement by meeting the needs of the whole student in the aim of producing high school graduates.

Parents are also aware of this transition and refocusing on student achievement and are often concerned when their child seeks to take an Agricultural Education class. Therefore, parents ask, does Agriculture Education influence student achievement? Even though most Agricultural Educators would proclaim that it does, there is also research that supports this hypothesis. Studies have been conducted time and time again on the benefits of Agricultural Education through experiential learning and student achievement. Research indicates that an

agricultural education program when used as a background program can unify both curriculum and sustenance to the students experience (Shinn, 2003). When following the Experimental Learning model, student achievement is measured through mastering of the course's learning objectives (Knobloch, 2001).

Students generally choose elective classes because of their personal interests which, for most, will eventually become the career area that they pursue. Thus, a second question that is often asked by parents, is Agricultural Education relevant to student success after high school? Most Agriculture Educators see the multiple benefits to students, including encouraging students to stay in school and choose a career pursuit when they graduate (Golden, 2014). Many of these observed benefits, however, are intangible and hard to quantify. For this reason, proving the worth of Agricultural Education must go beyond what is observed in and out of the classroom and must also incorporate accomplishments on standardized tests.

In recent years the use of standardized test has shifted the responsibility of educating students solely upon the public schools in Georgia. Moreover, educational state agencies throughout the United States are actively seeking ways to increase test scores and produce more secondary school graduates (Ricketts, Duncan, & Peake, 2006). Research indicated that the level of involvement in the Agriscience program has a positive effect on student achievement. Research also indicates that in increase in student achievement in science is directly impacted by the level of SAE engagement (Ricketts, Duncan, & Peake, 2006). Furthermore, research indicates a correlation between SAE projects and experiential learning, producing greater insight into students' career aspirations (Edwards, Ermis, & Dillingham, 2001). Thus, student achievement in areas such as Agricultural Education is enhanced through the gaining of more pragmatic experience through their SAEs and experiential learning. The hands-on experience

will then help students to better decide what path they will choose upon graduating high school.

To further understand what Agriculture Education can do for a student, researchers must also look at the Career and Technical Education Student Organization (CTSO) that goes along with Agriculture Education, the National FFA Organization or FFA. According to a recent study FFA members reported that when considering future plans their decision was based on the experiences from secondary studies (Shelley-Talbert, Conroy, & Dailey, 2000).

From the lenses of a historical context agricultural education has been attractive, authentic, and vigorous setting for students to learn academic theories by the use of experiential learning (Ramsey & Edwards, 2011). As more research directly correlates this benefit, Agricultural Educators can convey to student, parents, administration, legislators, and the public at large the ultimate benefit of student involvement in Agricultural Education. In this way, Agricultural Educators can continue to give students the tools to be successful throughout their lives and provide a meaningful way to measure student achievement.

Purpose of Study

The purpose of this descriptive study was to investigate the effects of agriculture classes at Tift County High School in the Tift County AES Academy on student achievement in terms of enrollment, including the number of students who passed a course, and mastering of course learning objectives.

Objectives

1. Describe participants by personal characteristics.
2. Determine if participants recommend the AES to other students.
3. Describe participants' educational aspirations by age.
4. Describe participants' perception on how the AES helped the students achieve various tasks.

5. Describe various skills and determine if the participants learned the skills in the AES.

6. Determine if the participants still use the skills that they learned in AES.

7. Evaluate the results of the Georgia High School Graduation Test and how AES students compare to the rest of the students in Tift County and Georgia.

Methods

In this study, the result of the research was the use of quantitative methods with a quasi, mixed-methods approach to provide background on the data from the survey. The Georgia High School Graduation Test (GHSGT) score and academic transcripts was used to measure the differences in Agricultural Education students and other students in the school based on diploma preference such as College Preparatory or Technical/Career Preparatory. Moreover, the study utilized student surveys to determine the accomplishments of students who had completed an Agricultural Education program between the years of 2005 to 2014. The students were also asked to indicate how important the skills were that they learned in the AES such as: Punctuality, Communication Skills, Leadership Ability, Team Work, Honesty, Ability to Follow Instructions, Work Ethics, Mechanical Skills, Literacy, Problem Solving Skills, Independence, Self-Motivation, Integrity, and Dependability; these skills make up the larger portion of what most employers now refer to as soft skills (The Mind Tools Content Team, 2017). Moreover, the students were also asked to rate how important these skills were to them. Then, the students were asked how much the AES Academy helped them to in the following areas: Passing Tests, Graduating High School, Garnering Scholarships, Going to College/Tech School, Being a productive member of society, and Choosing a Career. Next, the participants were asked about their level of education. Follow up questions such as do you work in the agriculture industry, would you recommend AES Academy to all students, and how did the AES prepare you for the

job you have now were also presented to the students as well. The use of a quantitative research with base-line questions was to not only to determine student achievement as it relates to academic standards but also, relate it to student achievement as being successful in the real world.

CHAPTER II

LITERAREY REVIEW

This section will discuss some of the aspects surrounding an Agricultural Education program. It will discuss topics such as student achievement and describe Agricultural Education programs. It will also discuss the relationship between student achievement and the Agricultural Education program.

Student Achievement

Student achievement is the magic term in today's American education system (Edwards, 2004). The term itself can be vacuous, inspiring different ideas and measurements in different individuals. Some view the student achievement in terms of the level of retention of knowledge as well as understanding of subject matter as well as skill set for the student at a given point in time (Student Learning, Student Achievement Task Force, 2009). Others view it as growth over time within these same areas (Student Learning, Student Achievement Task Force, 2009). The United States Department of Education (USDE) uses a similar measure of student growth, which is defined as the difference in what the student achieves within a specific point in time (United States Department of Education, 2012).

Through the lens of historical observations, education has been influenced by rituals that have become practice (Lunenburg & Ornstein, 2004). The practice of education has been scrutinized and examined to determine how rituals and practice have come into existence, methods to influence future outcomes and guiding philosophies (Lunenburg & Ornstein, 2004; Marzano, Pickering & Pollock, 2001). Additionally, there are mountains of research (DuFour & Eaker, 1998; Marzano, Pickering, & McTighe, 1993; Tomlinson, 1999; Wilson & Horch, 2002) that focuses on teacher induction, school leadership and student developmental processes in the

effort to promote student outcomes. From educational research, practitioners have learned to depend on research proven theories to guide their daily activities in the educational setting (Lunenburg & Ornstein, 2004). Significant inquiries (Capuzzi & Gross, 1993; DuFour, DuFour, Eaker, & Karhanek, 2004; Marzano, et.al., 2005; Tucker, McCarthy, & Benton, 2002; Wong, 2002) have delved into motivation, decisions, and attitudes on the part of the student in order to impact their outcomes and predict. From educational research, practitioners have learned to depend on research proven theories to guide their daily activities in the educational setting (Lunenburg & Ornstein, 2004). Significant inquiries into motivation, decisions, and attitudes on the part of the student in order to impact their outcomes and predict performance (Capuzzi & Gross, 1993; DuFour, DuFour, Eaker, & Karhanek, 2004; Tucker, McCarthy, & Benton, 2002; Wong, 2002). Similarly, scholastic approaches have evolved to evaluate influences on outcomes produced by the student in the academic setting (Letgers & Kerr, 2001; Strong, et al., 2001). Explicitly, school settings are under scrutiny in finding which situation is the leading contributor to student success at the best tome in the student's educational process so as to take full advantage of the learning process (Black, 2002; Capuzzi & Gross, 1993; Legters & Kerr 2001; Rourke, 2001).

Student achievement is measured on a national basis at the hands of the National Center for Educational Statistics (NCES), which evaluates science, mathematics, and reading scores. Declining scores inspired *A Nation at Risk* and *No Child Left Behind*. Schools responded, increasing graduation requirements, setting higher academic standards, and measuring student achievement through testing. Even though there were some modest increases in achievement gaps of mathematics and reading, science scores stagnated. Thus, the USDE stressed that schools and teachers should only use research-proven pedagogy. In response, the National Research

Agenda for Agricultural Education has highly prioritized determining a relationship of Agricultural Education to student achievement (Connors & Elliot, 1995). Intensified importance on standards and educator responsibility has been the focus for teachers for more than three decades (Marzano, 2004). A Nation at Risk (1983) and federal decrees that originate from the Educate America Act (2000) as well as the No Child Left Behind (NCLB) Act of 2001, prescribe exemplars that characterize the graduating High school student (Lunnenburg & Ornstein, 2004). *A Nation at Risk* (1983) and federal decrees from the *Goals 2000: Educate America Act* and the *No Child Left Behind (NCLB) Act of 2001*, have given school systems nationally the exemplars for characteristics of the graduating high school student. (Lunenburg & Ornstein, 2004).Thus, developing students that are work ready with skills derived directly from the high school classroom have become more prevalent in today's educational environment of preparing students to be workforce ready. Subsequently, with the implementation of *No Child left Behind*, there is now a predominate oversight to be a guarantor of student success. The responsibility that is now placed on the educator is measured collectively through an indicator known as adequate yearly progress (AYP) and are derived through the academic performance of the student and other factors such as attendance and graduation rates (Northwest Regional Educational Laboratory [NWREL], 2004). In like manner, the greater emphasis shifted for school reform with the 1983 report *A Nation at Risk* which examined school performance and student achievement with the expectations of promoting student success, high school graduation rates and transitioning students to post- secondary studies. State and Federal educational agencies sustain the fiat to implement reforms that are based on research and affirm methods that promote success for all students, which includes those districts in poverty stricken areas to meet standards for providing for student success (Marzano, et al., 2005; Southern Regional Education Board [SREB], 2002).

An outgrowth from *A Nation at Risk* (1983) has been the Comprehensive School Reform (CSR) which has been a catalyst for school reforms (Kilgore, 2005). Improvement standards are important resources in accelerating and supervising methods to improve student achievement. In response to the increased pressure for higher academic standards, Alabama Department of Education developed their own High School Graduation Exam (AHSGE). Nolin & Parr (2013) attempted to predict students who would be successful on the AHSGE due to the number of Agricultural Education courses that a student completes. The AHSGE tests students in the rudimentary studies of English language arts, math, science and social studies. The researchers found that their model successfully predicted language and mathematics scores while failing on the others. They encouraged further research using other states' exams (Nolin & Parr, 2013). Additionally, researchers (Parr, Edwards, & Leising, 2006) point out many contextualized, mathematically enhanced APT courses and aligned instructional techniques may be a suitable way to increase student achievement in mathematics and still not impact their technical skills in an adverse manner. In Georgia, students must meet the requirement of a graduation test which enables the education system to determine if the students should graduate according to the standards established by GADOE. The graduation assessment is useful in that it provides stakeholders with data relating to strengths and improvement area. Moreover, the test also helps to identify those who need more instruction in the concept and skills that are required for a diploma (Georgia Department of Education, 2014).

Agricultural Education

Agricultural Education was established in 1917 through the Smith-Hughes Act (Hillison, 1996). With its conception, a three-component model was established to enhance the education process. The first of the three components, the classroom and laboratory, provided in-school learning and

activities. These activities range from simple lecture to complex, hands-on laboratories. All of which provide insight into the agricultural industry. The second component, Supervised Agricultural Experiences (SAE) Projects, requires a higher order intellectual skill set to synthesize classroom knowledge and utilize the lessons in conducting a home project. These projects range from entrepreneurial ownership to placement in an agribusiness or farm, giving students a more in-depth career exploration. The final component is the FFA. The National FFA Organization offers competition, leadership, award, and scholarship opportunities to its members. These three components were and are guide for Agricultural Education (Crook, 2008; Dailey, Conroy, & Shelley-Tolbert, 2001). When looking at learning styles, Garton, Spain, Lamberson & Speirs (1999) indicates that a direct correlation is maintained in relevance between factors such as achievements, retention, and relationship between teacher and pupil.

In analyzing student achievement, Johnson, (1998) examined the use of hands-on activities in science classes. Agricultural Educators have placed substantial emphasis on the use of hands-on activities as a technique for teaching and/or strengthening student learning of science principles. The researchers suggest hands-on and worksheet reinforcement approaches were equally effective in supporting learning and retention of subject matter; hence, the time-tested use of hands-on, minds-on experiential learning of Agricultural Education is still a valid concept and is congruent with Staller's (2001) concept of the model of Agricultural Education. This model shows the relationship between what teachers teach and how teachers teach and the impact that it has on the lives of students. For example, class and laboratory instruction influences the students heavily on the academic side of education but has very little influence on life skills. On the other hand SAE program has little to do with the academics and life skills, but weighs heavy on the technical and career aspects of student achievement. Then, when looking at

the FFA, the model indicates that the FFA weighs heavy on the life skills but not so much on academics and the technical aspect of learning.

Science

The original premise of Agricultural Education in America centered on the scientific nature of agriculture with the Hatch Act of 1887 that fueled the scientific revolution of that era. Eventually, Agricultural Education within the public-school systems followed in 1917 by way of the Smith-Hughes Act, allowing agricultural science to be taught in a practical, vocational setting. The original thoughts were that placing agriculture into schools would allow science to be taught more effectively while educating to public about agriculture (Hillison, 1996). With the USDE's request for increased science scores, Agricultural Education was again attempting to prove its effectiveness within the area (Connors & Elliot, 1995; Thorn & Myers, 2011). Myers and Dyer (2006) concluded in their research on student content knowledge and science skills how a person entering a career in agriculture needs to continually know more about science and problem solving. Moreover, the use of laboratory activities often do not work for a student that has mental struggles. The results of this investigation submit that education conducted in an approach based on subject or investigation was more successful in generating student success than students that utilized the dogmatic approach to education. Likewise, Osborne (2000) discusses the use of experiences in the laboratories as a teaching tool for a traditional agriculture class. The challenge becomes for Agricultural Educators to conduct inquiries in the agriculture classes that provide experimental as well as hands- on applications of prior knowledge to enhance and gain knowledge. Agricultural Education students participate in a curriculum that is reinforced with science and math foundations and centered on the framework of agriculture (Dailey, Conroy, & Shelley-Tolbert, 2001). Further, science and math skills are reinforced

through Agricultural Education. Ramsey and Edwards (2004) surmised that Ag education supplements academics when utilized in the pursuit of enhancing math and science scores in a way more unique than any other career technical education subject matter. The use of math in the agriculture class is another way of using Agricultural Education's context-based, experiential learning to help enhance student achievement. To further understand Agricultural Education's relationship to math enhancement, Peake, Briers, & Murphy (2005) examined student achievement when teamed with the integration of technology in the classroom. The results of their study pointed to a correlation (albeit low) between math achievement and technology utilization on the Texas assessment for high school graduation. In like manner, Parr, Edwards, & Leising (2006) expressed that math enhanced agricultural mechanics impacted in a positive manner student accomplishment in overcoming the need for remediation in post-secondary studies. The researchers concluded that, like other researchers before them, so long as a setting has significance "for improving student comprehension and retention of subject matter" (Parr, Edwards, & Leising, 2006, p. 89). Additionally, Young, Edwards, and Leising, (2009) took the concept of mathematics in Agricultural Education one step further. They surmised that agricultural education students that participated in enriched agriculture mechanics studies, in which the teacher was immersed in a rigorous development of their own skills, were able to grasp a multifaceted understanding of targeted standards when compared to students that participated in conventional instruction. Although a surprising inference from this study, the students involved in the math enriched Ag mechanics curriculum with aligned instruction did not perform statistically higher than the on traditional testing than their peer in a traditional setting. The study clearly maps a curriculum centered on the development process of principles related to teaching and learning in experiential learning models.

Reading Research indicates that a student's level of achievement is directly related to what he or she reads. Even so, research conducted as a joint effort with Cornell University and the University of Florida (2002) points out there are very few instigations that study the impact of reading comprehension advanced by agricultural studies. Be that as it may, some researchers have examined ways to integrate reading into the Agriscience curricula. Parks and Osborne (2005) report that Agriscience programs are accommodating as far as to assimilate core subjects of math, science, and English language arts. With this practice put into action, students should be better able to assimilate the information that they are studying. According to Parks and Osborne (2005) reading is fundamental to the Agriscience classroom. It is an assimilation of interactions centered on the concepts that drive instruction. Utilizing this information, Agriscience teachers should utilize self-reading because of the perceived value it produces in helping to motivate the students in the subject matter that they were studying. All teachers are to some point reading teachers; thus, Ag educators should welcome the opportunity to enhance student achievement through reading and comprehension. Utilizing this concept, Agricultural Educators can integrate academics and career technical education to present a truly authentic curriculum that is integrated and unified as much as possible (Dewey, 1915). Further, science and math skills are reinforced through pragmatic settings and laboratories provided by Agricultural Education that allow the student to think for themselves and solve real-world problems. Researchers have found time and time again that Agricultural Education is an appropriate and viable vista for critical thinking skills, including problem solving and higher-order thinking, to be developed in students (Edwards, 2004). Burris and Garton (2006), expands upon the relationship of the students' characteristics and critical thinking. Critical thinking is essential in relation to students' achievement levels. Research supports the premise that "the development of critical thinking

skills has also been apparent in the expectations of student performance in public schools" (Burris & Garton, 2006).

To better understand student perceptions, Dailey, Conroy, and Shelley-Tolbert (2001) concluded that Agricultural Education is very versatile (p. 15) and that the students can get a diversity of experiences that are a valuable part of the learning process. Agricultural Education – SAE Supervised Agricultural Experience (SAE) projects were established in 1942 to give experiential learning to students and to bridge the gap between classroom learning and real-world application (Dailey, Conroy, & Shelley-Tolbert, 2001). SAEs epitomize the learning-by-doing portion of the FFA motto (Cheek, Arrington, Carter, & Randell, 1994). Students are required to integrate classroom knowledge as it correlates to their own personal projects. These projects range from entrepreneurial ownership of livestock or personal agribusinesses to placement at a local agribusiness or personal agricultural research projects (Cheek, Arrington, Carter, & Randell, 1994; Dailey, Conroy, & Shelley- Tolbert, 2001; Ramsey & Edwards, 2011). Agricultural Educators continuously challenge and reexamine the structure and curriculum of SAE to keep it current with the agricultural industry. No longer is the emphasis placed on training farmers; instead, FFA members experience biotechnology, animal science, forestry, and many other facets of agriculture that match their personal and career interests (Camp, Clarke, & Fallon, 2000). All SAEs require supervision from the FFA Advisor in order to model correct behaviors and provide feedback and reinforcement (Cheek, Arrington, Carter, & Randell, 1994; Dyer & Williams, 1997). Students keep accurate record books and detailed pictures capturing the essence of the project. This process reinforces science, mathematics, and language art skills (Dailey, Conroy, & Shelley-Tolbert, 2001; Ramsey & Edwards, 2011). In fact, advocates of Ag education point to the SAE as being the component that promotes independent learning,

intellectual development and the ability to work in conjunction with others (Ramsey & Edwards, 2011). SAE projects eventually culminate in a proficiency project, a portfolio entailing the details of the project over the years. These proficiency applications include financial data, skills assessments, pictures, and written descriptions of the projects progress. The finished proficiency application can then be submitted for competition against other FFA members within the area, state, and nation (Dailey, Conroy, & Shelley-Tolbert, 2001).

Most research conducted on SAEs and student achievement have proven there is a positive relationship between the two (Cheek, Arrington, Carter, & Randell, 1994). Even so, some Agricultural Education programs do not stress student SAEs due to a lack of understanding, poor teacher attitude, deficiency of resources, perception of time required, etc. Therefore, teacher preparation institutions have been challenged to include more training in the area of SAE, so that students can reap the benefit of the full program (Dyer & Osborne, 1995; Dyer & Williams, 1997).

Agricultural Education – FFA

FFA involvement has been shown to significantly influence student achievement (Cheek, Arrington, Carter, & Randell, 1994). Since its inception in 1928, this vocational youth organization has been a proactive influence on students throughout the nation, teaching members leadership and life skills and involving students in competitive events (Dyer & Osborne, 1995; Dyer & Williams, 1997). When considering student achievement, educators should look further than just what the student does in the class or on a test. Merit should be given to what the student does outside the normal school setting.

Leadership

Students involved in FFA and 4-H have better leadership skills than students that are not involved with these programs. These organizations emphasize leadership and learning by hands-on activities that build confidence (Parks & Osborne, 2005). Park and Dyer (2005) generalized that the leadership aspect of Ag education has come into a clearer focus with in the curriculum of undergraduate studies. Student members of FFA and 4-H in high school were more likely to participate in other student organizations once they reached college; thus, the leadership and social aspect of both agriculturally based programs becomes more prominent. Moreover, educators are encouraged to promote the idea of student participation in other organizations outside of their normal domains.

Career Development Events

Career Development Events (CDEs) also lend a hand to student success. CDEs, FFA's version of agricultural competitions, allow the student to gain a hands-on approach in learning where they apply the principles that they were taught in the class. Moreover, researchers Ramsey and Edwards (2004) indicated that the learned information may not have been learned in the class but rather learned outside of class; therefore, the class was not the reason for their achievement. This conclusion may be a misconception in that often instruction and CDE participation mirror one another. Additionally, for each Agricultural Education course, there is at least one CDE that allows the student to take the information learned in class to a competitive level. Chances are not likely that the student would be involved in the CDE if he or she was not enrolled in the class.

Life Skills

Life skills are the foundational guide to advance students to post-secondary studies and assimilation into adulthood. (Nolin & Parr, 2013). One necessary life skill is choosing a career.

Researchers Talbert and Balschweid (2006) investigated career objectives of FFA members in a career cluster. In a study that was replicated from 1999, FFA members were issued questionnaires to determine their career ambitions based on their high school preparation. The researchers found that Agricultural Education is very versatile in developing these skills (p. 15). Students get a wide variety of experiences from the classes, SAE projects, and FFA activities, making agriculture a valuable part of the learning process.

Parental Support and Involvement

Students get a wide variety of experiences from the classes, SAE projects, and FFA activities, making agriculture a valuable part of the learning process. To begin with, when students reach the high school age, there is still the need for Parental Support and Involvement which is needed to provide the student stability during this developmental life stage (Mizelle, 1999; Reents, 2002; Wong, 2002). Moreover, interaction with parents at this age is desirable because of the "stress and peer pressure students face" (Capuzzi & Gross, 1993). Regrettably, it is during this age that some parents withdraw from their child's lives leaving the uniformed student to plan their countenance or non-continuance of post-secondary studies. Consequently, as pointed out by Monahan (1992), indicated that it is essential to get the parents involved in the major areas of the students education while transitioning into high school and even into college to support student achievement. Students and more likely to achieve postsecondary success (Astone & McLanahan1991; Horn & West 1992; and Rumberger 1995). This critical juncture in a student's life should be monitored by the parent to ensure that the needs of the young adult are being met so that the student can perform at their highest levels.

Significance of Study

The significance denotes the concentration of confidence in the outcomes of an enquiry.

For example, an investigator can say that our subjects varied by a mean of five points with 100% certainty, based on what he/she personally witnessed. To say that the population census will vary necessitates the investigator to conclude the validity of the outcomes constructed on a numerical degree of oversight. If utilizing inferential statistics, the groups of those with and without work experience are different and we obligated to declare the projected error implicated in this conclusion (AllPsych, 2016).

Summary

The literature points out a variety of research that has been conducted to measure factors included in student achievement. Examination of the available research indicates that the variables involved in measuring student achievement may require the researcher to look beyond the test scores of quantitative data and employ qualitative analysis as well to form a clear picture of student success in Agricultural Education.

CHAPTER III

METHODS

The purpose of this investigation was to examine the effects of agriculture education classes in relation to student achievement by examining enrollment, the number of students that received a passing score for the class as well as to the student mastering the course learning objectives. Relative to the study, the Georgia High School Graduation Test (GHSGT) score and academic transcripts were utilized as a tool to gauge the students based on diploma preference or College Preparatory or Technical/Career Preparatory. Moreover, the study used student surveys to determine the accomplishments of students who had successfully fulfilled the requirements of an Agricultural education program spanning the past ten years. Conversely, the students were queried to specify how important the skills were that they attained in the AES Academy including the following: punctuality, communication skills, leadership ability, teamwork, honesty, ability to follow instructions, work ethics, mechanical skills, literacy, problem solving skills, independence, self-motivation, integrity, and dependability. They were also asked to rate how important these skills were to them. Then, the students were asked how much the AES Academy helped them to in the following areas: passing tests, graduating high school, getting scholarships, going to college/technical school, being a productive member of society, and choosing a career. Next, the participants were asked about their level of education. Other questions were ask, such as do you work in the agriculture industry, would you recommend AES Academy to all students, and how did the AES prepare you for the job you have now? This research examined the utilization of a mixed-method approach to determine student achievement as it relates to academic standards as well as how it relates it to student achievement as being successful in the real world. However, after evaluating the study, the investigation lent itself to

be a quantitative research since of the study could be shown both by standardized testing and utilizing surveys of past students as well as by interviews. (Creswell, 2009). In contrast, research (Hanson, Creswell, Clark, Petska, & Creswell, 2005) illustrates that by utilizing both forms of data investigators can test theoretical models and to alter them according to the feedback received from participants. Quantitative methods, on the other hand, utilizes inferential judgements which begins with a hypothesis, gathers data which is utilized to determine whether there is confirmation that data supports the hypothesis. Equally, a variable is a means of measuring attributes that differs or has two or more conceivable values. Quantitative investigation involves an analysis, in numeric form, to explain the variables. Variables used as descriptors such as, years of education, age and income are numeric in nature and give meaning to measurable amounts of certain characteristics that are being examined.

Strengths of Quantitative Research include:

- A generalization of the census which includes samples of individuals or specified groups.
- Fundamental variables that decide how disparities such as gender can be examined.
- Words, pictures, and narratives can be used to give understanding to numbers.
- Numbers can be utilized to enhance accuracy to illustrations and descriptions.
- The investigator can produce a test and grounded theory.
- Stronger evidence for a conclusion is provided through convergence and corroboration or findings.
- Collection of data and analysis is usually quick.
- Data is precise and quantitative.

- Statistical software has greatly aided researchers in producing fast, reliable results (Onwuegbuzie, 2004).

Weaknesses of Quantitative research include:

• The investigator may omit an occurrence because of the focus on speculation rather than on theory or hypothesis generation.

• Data gathered might be too theoretical a for direct application.

• Data may not be vigorous enough to explain multifaceted problems

• Can be difficult to understand context (Onwuegbuzie, 2004).

Even with the described weaknesses, the quantitative research method offers details into this research conundrum. The data collection procedure fits the design of the inquiry. This collection requires using procedures drawn from concurrent forms of data collection in addition to surveys of a population in which data is gathered simultaneously or from the successive "forms of data collection in which one type of data is collected and analyzed prior to a second data collection" (Creswell 2009). Inquiries used to conduct this type of research are generally surveys which are a popular means of data collection, facilitating an ease when gathering information from large groups, in an effort to ensure uniformity throughout the process.

The design of the survey can vary, but a constant within surveys are investigators' questions and respondent's answers. Most often, the investigators opt for answers within a predetermined range; this method of is known as close-ended questions. On the other hand, questions that are identified as open-ended present more of a challenge to quantify and presents time challenges as well. Ongoing, researchers progressively investigating the efficacy of new technologies that will advance their methods and adapt more readily to digital formats. In doing so, manpower to transcribe data into a format for understanding is greatly reduced. The group

targeted for this investigation was made up of individuals who were enrolled or had previously been enrolled in the Agricultural and Environmental Science (AES) Career Academy at Tift County High School in Tifton, Georgia. The AES Academy has had eleven graduated classes and has two that are still enrolled in Tift County High School at the time the data was collected. This group was chosen due to their interest in agriculture, diversity of classes, and rural/urban mixture of students within each class. Random selection was not considered as all members of the population received the questionnaire and had the opportunity to respond. The respondents were analyzed by gender, age, and race. The students' scores on the Science Portion of the GHSGT were also gathered to determine the effect of the AES Academy on student achievement in science.

A list of interview questions was compiled and distributed to the AES Academy student graduates and was used to gather data. The questions were prepared to ensure that the same information was obtained from each person along with categorical responses, such as age, race, gender, and years out of school. The questions were compiled and put online for the AES Academy students and graduates to answer via the online program called Survey Monkey. The current AES students completed the survey during one of their classes, and the AES graduates were contacted or invited to take the survey via requests on Facebook and word of mouth from other AES students and graduates.

In quantitative research, there is a strategy chosen to analyzing the data (Creswell, 2009). Since survey data and test scores must be presented concurrently, this was a concern in building quality research which should include integrity. The data collected for this research exhibits quality because it is based on test results that cannot be altered. It was collected from individuals who were pre-assigned to the research. Thus, the research spans both realms of the quality scale,

ensuring its honesty and reliability. In the examination of validity of this research, there are some threats to both the internal validity (evidence to support our claims) and external validity (treatment of the outcomes) (Ohlund, 2014). To point out an internal threat to this research, the AES Academy is an isolated group of students which could be considered as a single group that was chosen based on academics as well as interest versus strictly on interest. A student that is already considered as a high achiever might not be affected by the program, scoring well regardless of his or her academic and extracurricular surroundings (Student Learning, Student Achievement Task Force, 2009).

Another threat to the validity of the research is limited coverage (Student Learning, Student Achievement Task Force, 2009). Since most of the participants had graduated, not all have responded to the survey. To help guard against this threat, a response rate of at least 80% was sought to the questionnaire.

Quantitative research brings with it inherent threats to the validity and quality of findings. The following are some strategies used to guard against inaccuracy within the quantitative realm of this research:

- A clear understanding of the nature of the research was provided including but not limited to the size, scope, and use of data once collected.
- Engaging in building trust with the respondents.
- Comparing the results obtained with other evidence and data pieces.
- Utilizing measurements which consisted of longitudinal data constructed at different points, examining different settings and by different individuals.

This research was based on High School Graduation results as well as survey questions that were asked to current and past students that were enrolled in the AES Academy. The

students were reached through personal contact as well as emails that were sent to the students. Before collecting any data for this research, permission from the participants was gathered. A consent form was given to each of the participants of the online survey. The survey had questions that the participants answered pertaining to their opinions of the AES Academy as well as what they may have learned and how that has affected their lives. Some of the questions are as follows:

1. Age of participant.
2. Race of participant.
3. Gender of participant.
4. Rating the following leadership traits as to how important they are:
    a) Punctuality
    b) Communication Skills
    c) Leadership
    d) Team Work
    e) Honesty
    f) Work Ethics
    g) Mechanical skills
    h) Literacy
    i) Problem solving skills
    j) Independence
    k) Self –motivation
    l) Integrity
    m) Dependability

5. Indicating the leadership traits that were learned in the Agricultural Academy
    a) Punctuality
    b) Communication Skills
    c) Leadership
    d) Team Work
    e) Honesty
    f) Work Ethics
    g) Mechanical skills
    h) Literacy
    i) Problem solving skills
    j) Independence
    k) Self –motivation
    l) Integrity
    m) Dependability
6. Indicating the leadership skills that they use today and how often
    a) Punctuality
    b) Communication Skills
    c) Leadership
    d) Team Work
    e) Honesty
    f) Work Ethics
    g) Mechanical skills
    h) Literacy

i) Problem solving skills

j) Independence

k) Self –motivation

l) Integrity

m) Dependability

7. Indicating how much they believe that the AES Academy has or will help them in the following areas.

    a) Passing Tests

    b) Graduation High School

    c) Getting Scholarships

    d) Going to College/Tech school

    e) Being a productive member of society

    f) Choosing a career

8. Indicating their level of education

    a) High school Degree

    b) Tech school Degree

    c) Associates Degree

    d) Bachelor's Degree

    e) Master's Degree

    f) Specialist Degree

    g) Doctorate Degree

9. Indicating if they recommend the AES Academy to all students and why or why not.

10. Indicating how the AES prepared them for what they are doing now.

11. Indicating if the AES prepare them for what they are doing now.

12. Annual income.

Positioning questions that collected quantitative data was imperative to developing research with credibility. Since there were a few questions asked that were open ended and required a response, research methods as reported by Caelli, Ray and Mill, (2003), were utilized by addressing four key areas as pointed out by the researchers.

1. The theoretical positioning of the researcher.
2. The congruence between methodology and methods.
3. The strategies to establish rigor.
4. The analytic lens through which the data are examined. (p. 5).

Furthermore, Kvale (1996) described qualitative validity implemented at stages during the research. In this summary, validity is practiced throughout the inquiry. Thus, validation is a prerequisite in all aspects of the inquiry.

Once the data were collected from the online survey, I used the Georgia High School Graduation Test scores that were accessible through the computer program that is used at Tift County High School, known as Infinite Campus. The data used came from the results of the Math and Science portions of the Georgia High School Graduation Test. The data were compared for the state, school, and the students that had been enrolled in the AES Academy.

Definitions

Aliaga and Gunderson (2002) best explain the credibility criterion of quantitative research methods: Quantitative research is collecting numerical data that are analyzed to explain a phenomenon. Hence, it involves examining a phenomenon utilizing mathematical computations to help explain what was observed. Furthermore, quantitative research is

fundamentally about amassing and assembling data to describe a precise experience. Therefore, inquiries appear closely suitable for analysis utilizing quantitative research.

Conversely, quantitative inquiries present believability from the viewpoint of the researcher. From this standpoint, the purpose of qualitative inquiry is to present an understanding of the phenomenon being investigated by the researcher that presents legitimately the curiosity described in the results for interpretation in a numerical manner (Trochim 2006).

Transferability

Transferability refers to the scale to which the outcomes of quantitative research can be conveyed to other situations. Transferability is primarily the concern of the researcher conducting the study and generalizing the outcomes for future reference; in most cases, it is the reader. The researcher can boost transferability by doing a vigorous description of the study and the suppositions that the research were fundamental to. The researcher that desires to transfer the findings to a different setting is accountable for connecting the transferability as it relates to other situations (Trochim, 2006).

Reliability

The customary view of quantitative reliability adopts the concept of repeatability of outcomes utilizing identical research methods. Fundamentally, it is the premise that a researcher would cultivate the same find the same outcomes and observe the same occurrences twice. However, the reality is, this model of reliability is problematic. By characterization, if researchers are examining data multiple times, they are examining separate occurrences. In order to evaluate reliability, quantitative investigators develop a variety of hypothesis to circumvent this element. The notion of dependability, consequently, stresses the requisite for the researcher to acknowledge the ongoing change of perspective that occurs during research. Thus, the

researcher is accountable for explaining the variations that arise in the research and the changes that impact the means the researcher approached the investigation (Trochim, 2006)

Objectivity

Objectivity is utilized by the implementation of magnitude of the study along with data collection and analysis by which the researcher establishes reliability and validity. To achieve objectivity, complete operational procedures such as instrumentation and randomization should be implemented. As such, quantitative researchers emphasis the facts, which are created through mathematical prognostications. Moreover, objectivity is also a reference to the applicable expanse between the investigator and the study that diminishes preconception. Hence, the objective researcher is unlikely prejudiced by the participants and therefor does not manipulate the study.

Basic Assumptions

Assumptions in research are situations or instances that are somewhat out of the control of the researcher. However, if basic assumptions dematerialize, the research would become immaterial. For example, if a researcher was investigating an enquiry into the school art curriculum, one would surmise, there is a fundamental conjecture that art is and will remain an important part of the school offerings.

Limitations of Study

The limitations associated with this investigation are those individualities of procedure that influence the explanation of the conclusions from the enquiry. Those are the restrictions on take a broad view, applying to daily procedures, and utilizing the findings that are the product of the means in which the examiner originally desired to plan the analysis and/or the methodology utilized to ascertain both internal and external validity (California, 2016).

Chapter IV

Findings

The intent of this research was to investigate the effects of agriculture education classes on student outcomes when considering enrollment, the number of student s who passed a course, as well as whether the student mastered the learning objectives of the course. In this chapter, the findings will be presented by objective. In this study, the Georgia High School Graduation Test (GHSGT) score and academic transcripts were utilized in measuring the differences in the AES Academy students and their peers in regular class settings based on diploma preference of College Preparatory or Technical/Career Preparatory. Moreover, the study utilized student surveys to determine the accomplishments of students who had completed the Agricultural Education program at the AES Academy within the last ten year period. The use of quantitative methods as a methodology for this investigation was to not only determine student achievement as it relates to academic standards but, also, relate it to student achievement as being successful in the real world. Respondent Population Students from the Agricultural Environmental Science Career Academy at Tift County High School (N=180) during the years 2003-2013 were the population for this study. Questionnaires were sent to the entire population. Ninety eight students completed the survey for a reply rate of 54.44% for the study. The data utilized in the study was collected between September 1, 2012 and May 1, 2013.

Findings Related to Objective One

The first objective of the study was to describe students by selected personal characteristics. These variables for this study included the age, gender, and race/ethnicity of the individuals.

Age

Table 1 shows the distribution of student participants by age. Over 80% of the participants were 25 years old or younger. Students between the ages of 18 and 20 comprised 35.7% of the sample. Students between the ages of 21 years old and 25 years old comprised 28.6% of the sample. Students 17 years old and younger comprised 18.4% of the population.

Table 1

Participants by age (n=98)

Age	*f*	*%*
17 & Under	18	18.4
18-20	35	35.7
21-25	28	28.6
26-30	14	14.3
31-35	3	3.1
Total	98	100.0

Table 2 shows the distribution of student participants by race. Approximately 93% of the participants were Caucasian. Minority students of African American and Hispanic ancestry made up approximately 7% of the sample.

Table 2

Participants by Race (n=98)

Race	*f*	*%*
Caucasian	91	92.9
African American	5	5.1
Hispanic	2	2
Total	98	100.0

Table 3 shows the distribution of student participants by gender. 50% of the participants were male and 50% of the sample was female.

Table 3

Participants by gender (n=98)

Gender	*f*	*%*
Male	49	50.0
Female	49	50.0
Total	98	100.0

Participant Reflection

After gathering the results of the questionnaire from the Tift County High School AES Academy, I observed that an Agricultural Education program has different effects on its students. Some found that it was beneficial to them after they graduated, and others felt that there was

little effect on their lives. When presented the question in the survey of whether they would recommend the program to all students, a majority (79.6%) of the respondents indicated that they would recommend the program. Table 4 shows the distributions of resonance as to whether they would recommend the AES or not recommend the AES.

Table 4

Participants Recommend AES (n=98)

Answer	*f*	*%*
Yes	78	79.6
No	20	20.4
Total	98	100.0

When asked to respond to the question with a detailed answer, one such response was, "I would recommend the AES Academy to others. The AES Academy is one of the best career academies in the world! Agricultural knowledge and skills are not the only areas covered in the academy, but leadership skills and team building skills are taught and it is these skills that are needed in any career area. I believe the AES Academy students are more well-rounded individuals. They are the people wanted by others for any career area due to manners and ethics."

Even though some respondents were favorable, not all had the same opinion. The following responses illustrate a qualitative view from the former students. Respondent 28 said,

"While I enjoyed my time in the AES Academy from 2005 - 2007, I do not recommend this to someone unless they are absolutely certain that they want to pursue an agricultural related career. Even then, I would still recommend that they complete a general college prep curriculum with agriculture classes as electives. The academic AES class during the time I was in high school was a joke. They were not helpful or challenging at all. For example, I have never had to

write a real research paper when I had any of my English classes like the general English classes would have taught us. They did not prepare me at all for college, and I have really struggled in my classes because of it. I have especially had difficulties with English and writing. It has been a real struggle for me and will take me six years to get my four-year degree because of it. The academic curriculum should be more rigorous to prepare students to succeed in college. Another thing was that I was told not to take Chemistry, because I could take Animal Science instead to complete my science credits. However, it was highly recommended to me by a friend who was in college and said I needed to have Chemistry and I took it even though my advisor said I shouldn't and I am really glad that I did. Even at ABAC, you have to have upper level Biology classes and even other upper level science classes, so AES Academy students should be required to take more challenging science courses to prepare them for college. I did enjoy my experience, but there needs to be some significant improvements in the academic curriculum."

Other respondents indicated that they did not recommend the program to everyone but that it was just for students that were serious about their education. Respondent 38 commented that:

"No, it's not for everyone. Only dedicated, motivated, and hardworking students should be a part of it. Loving agriculture is not enough. AES provided me and my classmates with many amazing opportunities, but we had to work for them. We may have been helped by our teachers to achieve our goals, but they made us work to get there. There is rarely if ever a day that goes by that I do not use a skill taught in AES. My job is not even in agriculture. It does not matter what graduates of this program do with their lives; we are all better people for what we learned there. I would not give that experience up for the world!"

Similarly, Respondent 20 wrote, "I would recommend the AES Academy to students that

are willing to work for what they want. It will provide a great learning foundation that allows students to interact with each other on a daily basis. This program is one that is designed to build communication and teamwork skills and makes students accountable to each other in all areas of schoolwork. Many of the skills that I have acquired and have used in my business have roots in the AES Academy. The AES Academy is a great resource for students in all walks of life."

These statements and others like them illustrates that these individuals only recommend the program to someone who is willing to work for what they want. They feel that the program itself is designed to instill work ethics in the individuals enrolled in it to make them productive members of society.

These findings illustrate a reoccurring theme that Agricultural Education programs benefit the students that are enrolled in them. This finding is reinforced by the response of Respondent 25 who stated:

"I would fully recommend the AES Academy. Whether you go on to college or to work, you learn the skills needed to gain a job and do well in college. I believe that without this I would not have known as much as I did and I also would not have gained independence. I fully believe in it and I would not be where I was today without the Ag Academy!"

The question of how the AES prepare individuals for the job that they currently have was asked and Respondent 1 said:

"The AES Academy is one of the best career academies in the world! Agricultural knowledge and skills are not the only areas covered in the academy but leadership skills and team building skills are taught and it is these skills that are needed in any career area. I believe the AES Academy students are more well-rounded individuals. They are the individuals wanted by others for any career area due to manners and ethics."

Respondent 1 was supported by Respondent 6, who replied:

"It definitely helps to well-round students who are farm boys to urban gals that work on issues and discuss problems that relate to society, despite agricultural background or career interest. The academy exposed me to many different careers and parts of the agriculture industry and biological sciences. As well it pushed me to improve my writing skills for filling out scholarship applications and describing my research, which I still use today. Communication skills were a great part of the whole. I still tell stories about Meats or Cheese Day and learning how to rope a hay bale." Respondent 21 said, "I am currently working in a slaughter house and it helped me further my knowledge of the industry before I even started my current position." These are just three of the responses to the question that indicates that a good Agricultural Education program will benefit its students even after they graduate high school and start a career.

This survey question sought to identify how the program affected the students' achievement in their chosen field after graduation. Most of the students surveyed were planning to or pursued some type of education higher than a high school diploma. As illustrated in Table 5, all of the respondents within the seventeen and under area were in progress or had already completed high school.

Table 5

Completed High School Age = 17 and Under (n=18)

	f	*%*
Complete	5	27.8
In Progress	13	72.2
Total	18	100.0

Table 6 shows the percentage of students in the seventeen and under range who either planned to complete a technical degree or a Bachelor's degree from college. It also shows that a couple of students had already enrolled in the technical school.

Table 6

Post-Secondary Education Age = 17 and Under (n=20)

	f	*%*
Tech School In Progress	2	10.0
Planning On Pursuing Tech school	3	15.0
Planning On Pursuing Bachelor	15	75.0
Total	20	100.0

As indicated in Table 7, all the respondents in the 18 - 20 age group were in their senior year of high school or had recently graduated. They also indicated that they all were going to pursue higher education.

Table 7

Completed High School Age = 18-20 (n=35)

	f	*%*
Complete	21	60.0
In Progress	14	40.0
Total	35	100.0

As indicated in Table 8, of the18 - 20 years of age group, 13 - 14% of the respondents that were planning on pursuing a technical or associates degree or that had already completed a technical degree or an Associate's degree from college. This factor is an indication that the students achieve at a higher level.

Table 8

Tech School Degree Age = 18-20 (n=35)

	f	*%*
Complete Tech School	2	5.7
Tech School In Progress	3	8.6
Planning On Pursuing Tech School	7	20.0
Associates Complete	3	8.6
Associates In Progress	7	20.0
Planning on Pursuing Associates	13	37.1
Total	35	100.0

Table 9 shows that approximately 77% of the 18 - 20 year olds that responded were either planning on pursuing a Bachelor's degree or are in the progress of getting the degree.

Table 9

Bachelor's Degree Age = 18-20(n=35)

	f	*%*
In Progress	6	17.1
Planning On Pursuing	15	42.9
N/A	14	40.0
Total	35	100.0

Table 10 shows that nearly 46% of these students planned to get a Master's degree before they finish.

Table 10

Master's Degree Age = 18-20(n=35)

	f	*%*
Planning On Pursuing	16	45.7
N/A	19	54.3
Total	35	100.0

Table 11 shows the respondents in the 21-25, 26-30, and the 31-35 age groups revealed a 100% graduation rate, an indication of a positive effect of the achievement of the students within this program.

Table 11

Completed High School Age = 21-35(n=45)

	f	*%*
21-25 Graduated	28	62.2
26-30 Graduated	14	31.1
31-35 Graduated	3	6.7
Total	45	100.0

Table 12 shows that within the 21-25 age group, there is a positive effect on the students' achievements in terms of higher education, due to the fact that nearly 65% of these respondents indicated that they have already completed their technical degree.

Table 12

Tech School Degree Age = 21-25(n=28)

	f	*%*
Complete	4	14.3
In Progress	6	21.4
Planning On Pursuing	1	3.6
N/A	17	60.7
Total	28	100.0

Table 13 shows that within the 21-25 age group, there is a positive effect on the students' achievements in terms of higher education, due to the fact that nearly 67% of these respondents indicated that they have already completed Associate's degrees or were currently working on the degree. Another 11% indicated that they planned on pursuing the degree at a later date and only 21% indicated that they had no plans to pursue the degree.

Table 13

Associate Degree Age = 21-25 (n28)

	f	*%*
Complete	14	50.0
In Progress	5	17.9
Planning On Pursuing	3	10.7
N/A	6	21.4
Total	28	100.0

Table 14 shows that 14% completed their Bachelors' degrees. It also shows that nearly 29% are working on their bachelor's degree and that 14% plan on pursuing the degree.

Table 14

Bachelor's Degree Age = 21-25 (n=28)

	f	*%*
Complete	4	14.3
In Progress	8	28.6
Planning On Pursuing	4	14.3
N/A	12	42.9
Total	28	100.0

Table 15 shows that among the 26-30 year olds, the completion of a technical degree is just over 7%.

Table 15

Tech School Degree Age = 26-30 (n=14)

	f	*%*
Complete	1	7.1
Planning On Pursuing	1	7.1
N/A	12	85.7
Total	14	100.0

Table 16 shows that there is a 64% completion rate for the Associate's degrees among the 26-30 year olds.

Table 16

Associate Degree Age = 26-30 (n=14)

	f	*%*
Complete	9	64.3
In Progress	1	7.1
Planning On Pursuing	1	7.1
N/A	3	21.4
Total	14	100.0

Table 17 shows that there is a 64% completion rate for the Bachelors' degrees among the 26-30 year olds.

Table 17

Bachelor's Degree Age = 26-30 (n=14)

	f	*%*
Complete	9	64.3
In Progress	2	14.3
Planning On Pursuing	1	7.1
N/A	2	14.3
Total	14	100.0

Table 18 shows that there is a 14% completion rate for the Masters' degrees among the 26-30 year olds.

Table 18

Master's Degree Age = 26-30 (n=14)

	f	*%*
Complete	2	14.3
In Progress	3	21.4
Planning On Pursuing	3	21.4
N/A	6	42.9
Total	14	100.0

Table 19 shows that there is a 28% responded that they were either in progress or planning on pursuing a Specialists degree among the 26-30 year olds.

Table 19

Specialist Degree Age = 26-30 (n=14)

	f	*%*
In Progress	1	7.1
Planning On Pursuing	3	21.4
N/A	10	71.4
Total	14	100.0

Table 20 shows that in the 31-35 year old group indicated there is a 67% completion rate for the Bachelors' degree.

Table 20

Bachelor's Degree Age = 31-35 (n=3)

	f	*%*
Complete	2	66.7
N/A	1	33.3
Total	3	100.0

Table 21 shows that in the 31-35 year old group indicated there is a 67% completion rate for the Masters' degree.

Table 21

Master's Degree Age = 31-35 (n=3)

	f	*%*
Complete	2	66.7
N/A	1	33.3
Total	3	100.0

Table 22 shows that of all of the students that responded to the survey, over 72% graduated high school. The 28 % that have not completed high school are still in school and are on track to graduate on time.

Table 22

Graduated High School (n=98)

	f	*%*
Complete	71	72.4
In Progress	27	27.6
Total	98	100.0

Table 23 shows the number of students that have completed Technical school a degree equaled 7%, with 24% in progress or planning on pursuing the degree.

Table 23

Completed Tech School (n=98)

	f	*%*
Complete	7	7.1
In Progress	11	11.2
Planning On Pursuing	13	13.3
N/A	67	68.4
Total	98	100.0

Table 24 shows the number of students that have completed their associates' degree equaled nearly 30%, with 44% either in progress or planning to pursue the degree.

Table 24

Completed Associate Degree (n=98)

	f	*%*
Complete	29	29.6
In Progress	13	13.3
Planning On Pursuing	31	31.6
N/A	25	25.5
Total	98	100.0

Table 25 indicates there is a 15% frequency in completing the Bachelors' degree, with 51% either planning on pursuing or are in progress of pursuing the bachelors' degree.

Table 25

Completed Bachelor's Degree (n=98)

	f	*%*
Complete	15	15.3
In Progress	16	16.3
Planning On Pursuing	35	35.7
N/A	32	32.7
Total	98	100.0

Tables 26 indicates a 4% completion of the Master's degree, with 46% either planning to pursue the degree or are in progress for obtaining the degree.

Table 26

Completed Master's Degree (n=98)

	f	*%*
Complete	4	4.1
In Progress	6	6.1
Planning On Pursuing	40	40.8
N/A	48	49.0
Total	98	100.0

Table 27 indicates that 1% surveyed have completed the Specialist's degree and also shows that nearly 98% are pursuing or planning to pursue the degree.

Table 27

Completed Specialist Degree (n=98)

	f	*%*
Complete	1	1.0
In Progress	27	27.6
Planning On Pursuing	70	71.4
N/A	1	1.0
Total	98	100.0

Help Pass Tests

In looking at the effect of this program on student achievement, the participants were asked if they thought the AES Academy helped them in certain areas. When asked if they thought that the AES Academy helped them to pass tests, only 4% of those who responded negatively. Another 62% indicated that it helped a lot, nearly twice the amount that indicated that it only helped some or helped.

Table 28 shows the responses when asked about the effects of passing tests.

Table 28

Helped Pass Test (n=98)

	f	*%*
Help A lot	61	62.2
Help Some	22	22.4
Helped	11	11.2
Didn't Help	4	4.1
Total	98	100.0

Helped Graduate High School

Table 29 shows the results of the survey's question of whether the AES Academy helped the students to graduate high school. 75% of students indicated that it did help them a lot to graduate. This data reveals a large contrast considering that only 3% indicated that it did not help at all.

Table 29

Help Graduate HS (n=98)

	f	*%*
Help A lot	74	75.5
Help Some	10	10.2
Helped	11	11.2
Didn't Help	3	3.1
Total	98	100.0

Scholarships

Table 30 shows the results of the question of whether the AES Academy helped the students to attain scholarships. There were a significant amount of students indicating that it did help them. Roughly 84% indicating that it helped a lot. Only 5% indicated that it did not help.

Table 30

Helped Get Scholarship (n=98)

	f	*%*
Help A lot	82	83.7
Help Some	6	6.1
Helped	5	5.1
Didn't Help	5	5.1
Total	98	100.0

Helped in College

Table 31 shows the results of whether the AES Academy helped the students in college. Nearly 80%, indicated that it helped a lot with only 3% indicating that it did not help.

Table 31

Help in College (n=98)

	f	*%*
Help A lot	78	79.6
Help Some	9	9.2
Helped	8	8.2
Didn't Help	3	3.1
Total	98	100.0

Career Choice

Table 32 displays the responses of whether the AES Academy helped the students choose a career. There was a significant amount of students, 76%, who indicated that it did help them a lot to choose a career. Only 2% indicated that it did not help

Table 32

Helped Chose Career (n=98)

	f	*%*
Help A lot	74	75.5
Help Some	13	13.3
Helped	9	9.2
Didn't Help	2	2.0
Total	98	100.0

Member of Society

Table 33 shows the responses of whether the AES Academy helped the students to be a productive member of the society. 85% indicated that it did help them a lot.

Table 33

Help Be Productive (n=98)

	f	*%*
Help A lot	83	84.7
Help Some	8	8.2
Helped	6	6.1
Didn't Help	1	1.0
Total	98	100.0

Secure a Job

Table 34 shows the results of whether participants felt that the AES Academy helped them prepare for their current job. Nearly 75% indicated yes. There was only 25% that indicated that it did not prepare them for their current job.

Table 34

Prepare You for Your Job (n=98)

	f	*%*
Yes	73	74.5
No	25	25.5
Total	98	100.0

Skills Learned

The researcher sought to find if the perceived success of the students according to the survey was due to what the students learned while in the AES Academy. The respondents answered questions regarding whether or not they learned the following skills: punctuality, communication, leadership, teamwork, honesty, work ethics, mechanical skills, literacy, problem solving, and self-motivation.

Punctuality

Table 35 exhibits the responses when asked if students learned punctuality. Nearly 81% of the respondents indicated that they learned punctuality in the AES.

Table 35

Learned Punctuality (n=98)

	f	*%*
Learned in AES	79	80.6
Not Learned In AES	19	19.4
Total	98	100.0

Table 36 responses are even more relevant, considering that 95% indicated that punctuality was something that is important to very important. One point to note is the fact that all of the respondents indicated that the personal skill of punctuality was of at least some importance. None of them indicated that it was not important.

Table 36

Importance of Punctuality (n=98)

	f	*%*
Very Important	65	66.3
Important	28	28.6
Somewhat Important	5	5.1
Total	98	100.0

Table 37 shows that punctuality is used at least some times by the respondent and that over 95% indicate that they use it often or always.

Table 37

Use Punctuality (n=98)

	f	*%*
Use Always	72	73.5
Use Often	21	21.4
Use Sometimes	5	5.1
Total	98	100.0

Communication

According to the survey, communication skills are something that the respondents seem to agree upon. All indicated that it is at the very least somewhat important with 97% saying that it is important to very important. Furthermore, 98% indicated that they learned it in the AES Academy, 87% use this skill always, and about 9% use it often. The other 4% state that they use communication skills sometimes. None of the respondents indicate that they do not use communication skills.

Table 38 indicated that 98% of respondents learned Communication skills in the AES Academy.

Table 38

Learned Communication (n-98)

	f	*%*
Learned in AES	96	98.0
Not Learned In AES	2	2.0
Total	98	100.0

Table 39 indicated that communication is at the very least somewhat important with 97% saying that communication skills are important to very important.

Table 39

Importance of Communication (n=98)

	f	*%*
Very Important	75	76.5
Important	20	20.4
Somewhat Important	3	3.1
Total	98	100.0

Table 40 shows that about 9% of respondents use communication often. The other 4% state that they use communication skills sometimes.

Table 40

Use Communication (n=98)

	f	*%*
Use Always	85	86.7
Use Often	9	9.2
Use Sometimes	4	4.1
Total	98	100.0

Leadership

Leadership is another of the skills that 92% of the respondents indicated is important with 98% indicated that they learned in the AES. Here again, all of the respondents say that they use this life skill with 75% indicating that they use it all the time.

Table 41 shows that leadership is another of the skills that 98% indicated they learned in the AES Academy.

Table 41

Learned Leadership (n=98)

	f	*%*
Learned in AES	96	98.0
Not Learned In AES	2	2.0
Total	98	100.0

Table 42 shows that leadership is another of the skills that 92% of the respondents indicated are important.

Table 42

Importance of Leadership (n=98)

	f	*%*
Very Important	70	71.4
Important	20	20.4
Somewhat Important	8	8.2
Total	98	100.0

Table 43 shows that leadership is another of the skills that all of the respondents say that they use with 75% indicating that they use it all the time.

Table 43

Use Leadership (n=98)

	f	*%*
Use Always	73	74.5
Use Often	19	19.4
Use Sometimes	6	6.1
Total	98	100.0

Teamwork

Teamwork is another highly-rated life skills that 97% of the respondents indicated were important to very important and 96% indicated that they learned in the AES. All of the respondents say that they use this life skill.

Table 44 shows that 96% of the respondents indicated that they learned teamwork in the AES Academy.

Table 44

Learned Teamwork (n=98)

	f	*%*
Learned in AES	94	95.9
Not Learned In AES	4	4.1
Total	98	100.0

Table 45 shows that 97% of the respondents indicated teamwork was important to very important.

Table 45

Importance of Teamwork (n=98)

	f	*%*
Very Important	80	81.6
Important	15	15.3
Somewhat Important	3	3.1
Total	98	100.0

Table 46 shows that all of the respondents say that they use teamwork skills with almost 44% using teamwork skills always.

Table 46

Use Teamwork (n=98)

	f	*%*
Use Always	43	43.9
Use Often	54	55.1
Use Sometimes	1	1.0
Total	98	100.0

Honesty

When ask if they learned honesty, nearly 89% of the respondents indicated that they learned honesty in the AES. This amount is relevant considering that 98% indicated that it was something that is important to very important and that it is something that they use often to always.

Table 47 shows that 89% of respondents learned honesty in the AES Academy.

Table 47

Learned Honesty in AES (n=98)

	f	*%*
Learned in AES	87	88.8
Not Learned In AES	11	11.2
Total	98	100.0

Table 48 shows that 98% of the respondents indicated that honesty was something that is important to very.

Table 48

Importance of Honesty (n=98)

	f	*%*
Very Important	88	89.8
Important	6	6.1
Somewhat Important	4	4.1
Total	98	100.0

When looking at the use of honesty, Table 49 shows that honesty is something that the respondents use often to always.

Table 49

Use Honesty (n=98)

	f	*%*
Use Always	88	89.8
Use Often	9	9.2
Use Sometimes	1	1.0
Total	98	100.0

Work Ethic

Work ethic, another skill, was totaled as 94% of the respondents agreed that it is taught in the AES Academy. 99% stated that it is something that is important to very important.

Table 50 shows 81% of respondents felt that work ethics are taught in the AES Academy.

Table 50

Learned Work Ethics in AES (n=98)

	f	*%*
Learned in AES	79	80.6
Not Learned In AES	19	19.4
Total	98	100.0

Table 51 shows that 99% of the respondents stated that work ethics is something that is important to very important.

Table 51

Importance of Work Ethics (n=98)

	f	*%*
Very Important	81	82.7
Important	13	13.2
Somewhat Important	4	4.1
Total	98	100

Table 52 shows that all of the respondents use work ethics at least some times with nearly 88% using work ethics always.

Table 52

Use Work Ethics (n=98)

	f	*%*
Use Always	86	87.8
Use Often	10	10.2
Use Sometimes	2	2.0
Total	98	100.0

Mechanical Skills

When evaluating mechanical skills, only 85% agree that mechanical skills are taught in the AES Academy. Nearly 95% agree it is important, and 94% indicated that they use this skill at some time in their lives.

Table 53 shows that 85% of the respondents agree that mechanical skills are taught in the AES Academy.

Table 53

Learned Mechanical Skills in AES (n=98)

	f	*%*
Learned in AES	83	84.7
Not Learned In AES	15	15.3
Total	98	100.0

Table 54 shows that nearly 95% agree it is at least somewhat important.

Table 54

Importance of Mechanical Skills (n=98)

	f	*%*
Very Important	47	48.0
Important	31	31.6
Somewhat Important	15	15.3
Not Important	5	5.1
Total	98	100.0

Table 55 shows that nearly 94% use mechanical skills.

Table 55

Use Mechanical Skills (n=98)

	f	*%*
Use Always	63	64.3
Use Often	25	25.5
Use Sometimes	4	4.1
Does not Use	6	6.1
Total	98	100.0

Literacy

With the increased in the accountability for literacy, the AES Academy tries to put academic literacy in the curriculum for the students (Cook, 2014). Most of the respondents agree that the AES Academy utilizes literacy in its curriculum with nearly 80% of the respondents saying that literacy is something that they learned. Nearly 92% of the respondents indicate that literacy was important to very important. All of the respondents indicated that they use literacy at least sometimes.

Table 56 shows that nearly 80% of the respondents learned literacy in the AES.

Table 56

Learned Literacy in AES (n=98)

	f	*%*
Learned in AES	78	79.6
Not Learned In AES	20	20.4
Total	98	100.0

Table 57 shows that nearly 92% of the respondents indicated that literacy was important to very important.

Table 57

Importance of Literacy (n=98)

	f	*%*
Very Important	64	65.3
Important	26	26.5
Somewhat Important	6	6.1
Not Important	2	2.0
Total	98	100.0

When looking at the use of literacy, Table 58 shows that all of the respondents indicated that they use literacy at least sometimes.

Table 58

Use Literacy (n=98)

	f	*%*
Use Always	75	76.5
Use Often	19	19.4
Use Sometimes	4	4.1
Total	98	100.0

Problem Solving

Problem solving is the process of working through the details of a problem to reach a solution. Problem solving may include mathematical or systematic operations and can be a

gauge of an individual's critical thinking skills (BusinessDictionary.com, 2014). Nearly 91% of the respondents indicated that they learned problem solving skills in the AES Academy. Over 92% indicated that it was important to very important with 98% indicating that they use problem solving often to very often.

Table 59 shows that nearly 91% of the respondents indicated that they learned problem solving skills in the AES Academy.

Table 59

Learned Problem Solving in AES (n=98)

	f	*%*
Learned in AES	89	90.8
Not Learned In AES	9	9.2
Total	98	100.0

Table 60 shows that over 92% indicated that it was important to very important.

Table 60

Importance of Problem Solving (n=98)

	f	*%*
Very Important	60	61.2
Important	32	32.7
Somewhat Important	6	6.1
Total	98	100

Table 61 shows that 98% indicated that they use problem solving often to very often.

Table 61

Use Problem Solving (n=98)

	f	*%*
Use Always	76	77.6
Use Often	19	19.4
Use Sometimes	3	3.0
Total	98	100

Self-Motivation

Self-motivation, the force that drives an individual to do something without being told, is another aspect studied (BusinessDictionary.com, 2014). Of the AES Academy respondents, nearly 90% indicated that they learned it within the program. Most, 92%, indicated that self-motivation is from important to very important, and 98% of the respondents said that they use self-motivation often to always.

Table 62 shows that, of the AES Academy respondents, nearly 90% indicated that they learned it within the program.

Table 62

Learned Self-motivation in AES (n=98)

	f	*%*
Learned in AES	88	89.8
Not Learned In AES	10	10.2
Total	98	100.0

Table 63 shows that 92% indicated that self-motivation is from important to very important.

Table 63

Importance of Self-motivation (n=98)

	f	*%*
Very Important	76	77.6
Important	15	15.3
Somewhat Important	7	7.1
Total	98	100.0

Table 64 shows that 98% of the respondents said that they use self-motivation often to always.

Table 64

Use Self-motivation (n=98)

	f	*%*
Use Always	86	87.8
Use Often	10	10.2
Use Sometimes	2	2.0
Total	98	100.0

Graduation Test Results

Using the data from the 2009 – 2014 Georgia High School Graduation Test, science and math scores were evaluated. The following data was retrieved (Tift County Schools, 2009-2014) and shows the percentages of the first time test takers for the graduation test, which are divided into the following categories: Exceeded, Meets, or Did not Meet Expectations.

Table 65 shows that during the 2009 school year, AES Academy students exceeded expectations more frequently than Tift County as a whole and the State of Georgia with a 100% pass rate on the math portion and with nearly 73% exceeding in math. Students at Tift County High School had a pass rate of 93% on the math portion of the GHSGT with 43% Exceeding Expectations on this portion. Georgia students had a 91% pass rate with 46% exceeding at the state level.

Likewise, AES Academy students exceeded expectations more frequently than Tift County and the State of Georgia with 100% pass rate on the science portion with nearly 55% exceeding in science. The students at Tift County High School had a pass rate of 84% on the science portion of the GHSGT with 47% exceeding this portion. These numbers compare with a 84% pass rate with 47% exceeding at the state level.

Table 65

High School Graduation Test Results 2009

			Exceeding		Meeting		Not Meeting	
		N	*f*	*%*	*f*	*%*	*f*	*%*
AES Academy	Math	11	8	72.7	3	27.3	0	0.00
	Science	11	6	54.5	5	45.5	0	0.00
Tift County	Math	454	194	42.73	227	50.00	33	7.27
	Science	454	213	46.92	168	37.00	73	16.08
State of Georgia	Math	96,131	44,221	46.00	43,258	45.00	8,653	9.00
	Science	96,131	45,182	47.00	35,569	37.00	15,380	19.00

Note: Exceeding = High Passing, Meeting = Passing, and Not Meeting = Failing

Table 66 shows that during the 2010 school year, AES Academy students exceeded expectations more frequently than Tift County and the State of Georgia with a 91% pass rate on the math portion and with nearly 54% exceeding in math. Students at Tift County High School had a pass rate of 87% on the math portion of the GHSGT with 41% exceeding this portion. Georgia students had a 89% pass rate with 48% exceeding at the state level.

Likewise, AES Academy students Exceeded Expectations more frequently than Tift County and the State of Georgia with 100% pass rate on the science portion with nearly 54% exceeding in science. The students at Tift County High School had a pass rate of 83% on the science portion of the GHSGT with 43% exceeding this portion. These numbers compare with a 84% pass rate with 47% exceeding at the state level.

Table 66

High School Graduation Test Results 2010

			Exceeding		Meeting		Not Meeting	
		N	*f*	*%*	*f*	*%*	*f*	*%*
AES Academy	Math	13	7	53.80	5	38.50	1	7.70
	Science	13	7	53.80	6	46.20	0	0.00
Tift County	Math	455	187	41.02	209	45.93	59	12.97
	Science	455	196	43.08	182	40.00	77	16.92
State of Georgia	Math	98,285	47,177	48.00	40,297	41.00	10,811	11.00
	Science	98,285	46,194	47.00	36,365	37.00	15,726	16.00

Note: Exceeding = High Passing, Meeting = Passing, and Not Meeting = Failing

Table 67 shows that during the 2011 school year, AES Academy students exceeded expectations more frequently than Tift County and the State of Georgia with a 100% pass rate on the math portion and with nearly 64% exceeding in math. Students at Tift County High School had a pass rate of 44% on the math portion of the GHSGT with only 2% exceeding this portion. Georgia students had a 43% pass rate with only 3% exceeding at the state level.

Likewise, AES Academy students exceeded expectations more frequently than Tift County and the State of Georgia with 100% pass rate on the science portion with nearly 50% exceeding in science. The students at Tift County High School had a pass rate of 40% on the science portion of the GHSGT with only 5% exceeding this portion. These numbers compare with a 31% pass rate with only 3% exceeding at the state level.

Table 67

High School Graduation Test Results 2011

			Exceeding		Meeting		Not Meeting	
		N	*f*	*%*	*f*	*%*	*f*	*%*
AES Academy	Math	14	9	64.30	5	35.70	0	0.00
	Science	14	7	50.00	7	50.00	0	0.00
Tift County	Math	422	9	2.13	177	41.94	236	55.93
	Science	422	21	4.98	148	35.07	253	59.95
State of Georgia	Math	101,293	3,039	3.00	40,517	40.00	57,739	57.00
	Science	101,293	3,039	3.00	27,890	27.53	70,364	69.47

Note: Exceeding = High Passing, Meeting = Passing, and Not Meeting = Failing

Table 68 shows that during the 2011 school year, AES Academy students exceeded expectations more frequently than Tift County and the State of Georgia with a 95% pass rate on the math portion and with nearly 42% exceeding in math. Students at Tift County High School had a pass rate of 45% on the math portion of the GHSGT with only 5% exceeding this portion. Georgia students had a 46% pass rate with only 7% exceeding at the state level.

Likewise, AES Academy students exceeded expectations more frequently than Tift County and the State of Georgia with an 81% pass rate on the science portion with nearly 19% exceeding in science. The students at Tift County High School had a pass rate of 29% on the science portion of the GHSGT with only 3% exceeding this portion. These numbers compare with a 51% pass rate with 11% exceeding at the state level.

Table 68

High School Graduation Test Results 2012

			Exceeding		Meeting		Not Meeting	
		N	*f*	*%*	*f*	*%*	*f*	*%*
AES Academy	Math	21	9	42.86	11	52.38	1	4.76
	Science	21	4	19.05	13	61.90	4	19.05
Tift County	Math	422	21	4.98	173	40.99	228	54.03
	Science	422	13	3.08	110	26.07	299	70.85
State of Georgia	Math	99,375	6,956	7.00	38,756	39.00	53,663	54.00
	Science	99,375	10,931	11.00	39,750	40.00	48,694	49.00

Note: Exceeding = High Passing, Meeting = Passing, and Not Meeting = Failing

Table 69 shows that during the 2013 school year, AES Academy students exceeded expectations more frequently than Tift County and the State of Georgia with a 100% pass rate on the math portion and with nearly 46% exceeding in math. Students at Tift County High School had a pass rate of only 11% on the math portion of the GHSGT with only 2% exceeding this portion. Georgia students had a 21% pass rate with only 3% exceeding at the state level.

Likewise, AES Academy students exceeded expectations more frequently than Tift County and the State of Georgia with 100% pass rate on the science portion with nearly 29% exceeding in science. The students at Tift County High School had a pass rate of 42% on the science portion of the GHSGT with only 4% exceeding this portion. These numbers compare with a 64% pass rate with 15% exceeding at the state level.

Table 69

High School Graduation Test Results 2013

			Exceeding		Meeting		Not Meeting	
		N	*f*	*%*	*f*	*%*	*f*	*%*
AES Academy	Math	17	8	46.06	9	52.94	0	0.00
	Science	17	5	29.41	12	70.59	0	0.00
Tift County	Math	437	9	2.06	40	9.15	388	88.79
	Science	437	18	4.12	167	38.22	252	57.66
State of Georgia	Math	101,635	3,050	3.00	18,295	18.00	80,290	79.00
	Science	101,635	15,246	15.00	49,669	48.87	36,720	36.13

Note: Exceeding = High Passing, Meeting = Passing, and Not Meeting = Failing

Table 70 shows that during the 2014 school year, AES Academy students exceeded expectations more frequently than Tift County and the State of Georgia with a 100% pass rate on the math portion and with nearly 38% exceeding in math. Students at Tift County High School had a pass rate of 20% on the math portion of the GHSGT with 1% exceeding this portion. Georgia students had a 30% pass rate with 3% exceeding at the state level.

Likewise, AES Academy students exceeded expectations more frequently than Tift County and the State of Georgia with a 94% pass rate on the science portion with nearly 6% exceeding in science. The students at Tift County High School had a pass rate of 25% on the science portion of the GHSGT with 4% exceeding this portion. These numbers compare with a 34% pass rate with 3% exceeding at the state level.

Table 70

High School Graduation Test Results 2014

			Exceeding		Meeting		Not Meeting	
		N	*f*	*%*	*f*	*%*	*f*	*%*
AES Academy	Math	16	6	37.5	10	62.5	0	0
	Science	16	1	6.25	13	81.25	2	12.5
Tift County	Math	442	5	1.13	84	19.01	353	79.89
	Science	442	18	4.07	93	21.04	331	74.89
State of Georgia	Math	103,486	3,105	3.00	32,081	31.00	68,300	66.00
	Science	103,486	5,174	5.00	39,325	38.00	58,987	57.00

Note: Exceeding = High Passing, Meeting = Passing, and Not Meeting = Failing

Table 71 shows that during the 2009-2014 school year, AES Academy students exceeded expectations more frequently than Tift County and the State of Georgia with nearly a 98% pass rate on the math portion and with over 51% exceeding in math. Students at Tift County High School had a pass rate of almost 51% on the math portion of the GHSGT with just over 16% exceeding this portion. Georgia students had just over 53% pass rate with almost 18% exceeding at the state level.

Likewise, AES Academy students exceeded expectations more frequently than Tift County and the State of Georgia with over 93% pass rate on the science portion with nearly 33% exceeding in science. The students at Tift County High School had a pass rate of just over 51% on the science portion of the GHSGT with 18% exceeding this portion. These numbers compare with just over 59% pass rate with nearly 21% exceeding at the state level.

Table 71

Georgia High School Graduation Test Results 2009-2014

			Exceeding		Meeting		Not Meeting	
		n	*f*	*%*	*f*	*%*	*f*	*%*
AES Academy	Math	92	47	51.09	43	46.74	2	2.17
	Science	92	30	32.61	56	60.87	6	6.52
Tift County	Math	2,632	425	16.15	910	34.57	1,297	49.28
	Science	2,632	479	18.20	868	32.98	1,285	48.82
State of Georgia	Math	600,205	107,548	17.92	213,204	35.52	279,456	46.56
	Science	600,205	125,766	20.95	228,568	38.08	245,871	40.96

Note: Exceeding = High Passing, Meeting = Passing, and Not Meeting = Failing

As show in Table 72 there was a statistically and significant different mathematics test scores by location, *F*=147.70 (2, 602,926), *p*=.00. AES Academy students were more likely to pass or high pass (*M*=1.51, *SD*=.55) the Georgia High School *Math* Graduation test than student in Tift County (*M*=2.49, *SD*=.76) or the State of Georgia (*M*=2.29, *SD*=.75). There was a statistically and significant different in science test scores by location, *F*=182.71 (2, 602,926), *p*=.00. AES Academy students were more likely to pass or high (*M*=1.74, *SD*=.57) the Georgia High School *Science* Graduation test than student in Tift County (*M*=2.49, *SD*=.78) or the State of Georgia (*M*=2.23, *SD*=.73). Post hoc analysis showed statistically and significantly different scores by all three locations by mathematics and science. In all cases AES student scored higher on mathematics and science than State of Georgia students; State of Georgia students scored higher than Tift County students.

Table 72

Georgia High School Graduation Test Results by Location 2009-2014

Location		*n*	*M*	*SD*	*p*
AES Academy	Math	92	1.51	.55	.00
	Science	92	1.74	.57	.00
Tift County	Math	2,632	2.49	.76	
	Science	2,632	2.49	.78	
State of Georgia	Math	600,205	2.29	.75	
	Science	600,205	2.23	.73	
Note: M, 1=Exceeding (High Passing), 2=Meeting (Passing), and 3=Not Meeting (Failing)					

Chapter V

Conclusion

Over the past thirty years, the United States as a nation has struggled with increasing academic achievement in the public schools. Hence, public education and student success can be considered from two viewpoints. First, we can evaluate student achievement by evaluating the number of students that pass the course. Secondly, we can evaluate the student achievement by the number of students that master the prescribed standards of the course (Florida State University, 2002). Evaluation of student achievement have presented obstacles that have led to mandates that public education now work under in order to better prepare the student for transition to the workforce. When evaluating the composition of the AES Academy it is evident that the curriculum and academic design of the academy is an innovation that offers enhanced student achievement, career exploration and implementation of the core activities of FFA and Agricultural Education, which has long used a pragmatic approach to problem solving. This research investigated the perceived outcomes of students in a setting that was employed during the 1997-1998 school year and has endured a ten year life span. To examine this setting, the research utilized data that was designed to gauge student perception of the educational facility and the individual outcomes in preparing them for life after secondary education.

The Tift County School System strives to aid students in their achievement and become productive members of the community after graduation. The Agricultural Education program at Tift County High School is unique in the state of Georgia. It not only has the typical Agricultural Education program with Agriscience, Plant Science, Animal Science, etc. courses but also has added a school-within-a-school program known as the Agricultural and Environmental Science (AES) Career Academy. This program is dedicated to student achievement while in school and

after graduation. The AES Academy is composed of a group of twenty eight eleventh grade students with interest in Agriscience that have completed an application while in the tenth grade and accepted by the department head for admittance into the program. Once accepted the students will be enrolled in the AES Academy for their junior and senior years of high school. Most of the respondents indicated that the AES Academy had a positive influence on their lives and helped them to get where they are today. This fact was reinforced in their comments and the data from the Georgia High School Graduation Test.

The results of the study indicate that the integration of curriculum in math, science and reading in the AES has a positive impact on student achievement. When comparing the results in each of the three areas of curriculum, the students either matched or scored higher than non AES students at Tift County High School as well as across the state of Georgia. Consistently, the amalgamation of the curriculum proved to benefit students as represented in test scores. For the years examined, math and science test scores of AES were continuously outranking their peers at both the local and state level. This finding is correlated to other research such as Curry, (2012) which indicated that a core foundation of education is that students learn what they practice. Moreover, the contextual approach is promising in that students learn to think contextually and implement core academic concepts. This study presents findings which indicate curriculum integration in an AES has beneficial instruction that enhances both student achievement and core content. Likewise, Thoron & Myers (2011) deducted that students benefited from a problem solving or inquiry based instruction. These results were in direct opposition to previous studies conducted that stated that there were little to no difference in curriculum integration (Nolin & Parr, 2013, pp. 41-53) such as researchers Curry, Wilson, Flowers and Farrin, 2012 who concluded that curriculum based on contextual foundations did not impact student learning based

on pre/posttest scores in comparison to conventional approaches. When addressing the issue of responders, non-responders, late responders and validity of this research, 68 responders were early while 30 were late responders. Upon comparison of all categories of early responders to late responders, no significant difference was observed. Given that there was a 54% response rate, research supported that this is a sufficient rate given that 30 respondents participated as late responders. Moreover, by utilization of them methodology prescribed by Linder, Murphy and Biers, (2001) similarities can between drawn between responders (both late and no responders) to indicate that there are no noteworthy differences between the two. Accordingly, if there were no difference as was noted in this research between the two groups, the deduction is, there are no substantial dissimilarities between responders and non-responders for this research. Therefore, the conclusion can be reached that nonresponse error is not a threat to external validity of the research. In addition, this lends veracity to suggest that this research and that of Ramsey and Edwards (2004) and Parr, Edwards, & Leising, 2006 advocates that Agricultural Education has a positive impact on student achievement in fundamental education classes such as math and science. Centered on the findings of this investigation, one could deduct that the AES Academy concept is conducive to producing higher results in a climate of high incentive test such as in the case of the Georgia High School Graduation Test. But, this investigation also leaves some unanswered questions such as how much did the need for achievement impact the end result. In looking at this phenomenon, there are other capricious factors such as race, gender, ethnicity, and socioeconomic status that were not examined in this study that could possibly have implications. However, on the surface, the integration of curriculum and setting in the AES at Tift County High School has definitely provided impressive results in student achievement. Moreover, the

results of this investigation may be significant to other school districts and state agencies in evaluating the needs of a like academy.

Moreover, this model of education could also provide assistance in developing programs in other school districts that are seeking to improve student achievement. This research has inferences for other school districts that are investigating differentiated instruction and settings for an academy in a similar size and demographic district. Additionally, the research would lend itself to investigate any correlations between instructors at the academy and student achievement. Moreover, the researcher concedes that more research is needed to further determine the outcomes of implementing this type or similar types of educational innovations in achieving positive student results. The following proposals are suggested for deliberation:

1. The local school district should institute an evaluation method to examine the AES Academy's functions and determine how each is significant in refining the effort to enhance student achievement.
2. The school district should ensure that all students are have refined opportunities for success by implementing internships and job shadowing events.
3. A concerted emphasis should be placed on utilizing diverse data sources relevant to student achievement to promote short and long term goals centered on educational outcomes and career viability for incoming students.
4. The school should utilize and actively administer perception surveys that include participations from students, parents, teachers and community partners in an effort cultivate opinions pertaining to school climate, education attainment, and long term student outcomes.

5. The school district should capitalize and fully utilize teachers' specialties and exceptionalities to enrich collaboration and to promote teacher leadership within the school building.
6. Building level personnel at all levels should research and promote professional learning activities and resources relating to career exploration and formation.
7. Building level educators should be encouraged to observe their peers' teaching practices and consider developing best practices to engage students in meaningful learning.

While the characteristics described in this location may be utilized in like settings, the amalgamation of methods given at this setting seems to have faculty and students moving toward advanced student achievement. In conclusion, it is recommended that additional investigations be conducted to determine the levels of student, parent, teacher and community partner satisfaction through use of deductive analyses and qualitative interaction.

Teachers all share the responsibility of preparing students for a high degree of literacy in multiple areas to prepare them for postsecondary studies and future careers. Understanding student achievement is vital in that preparation. Thus, programs should be designed and put in place in rural and urban programs that are 21st century agricultural programs. Also, the programs are to be challenging, meaningful, and relevant. All students are to be challenged by designing an agricultural curriculum that aligns all areas of general-education into the agricultural-education program and by using cross curricular methods of designing and delivering a meaningful educational experience. By designing programs that will incorporate multiple disciplines, the Agricultural program would take on a more reminiscent practice for the student. This method is needed for students in inner-city and country schools to give Agricultural Education significance

to the real world the student will enter into upon completion of their secondary studies. A major example of this kind of school is the Chicago High School for Agricultural Sciences. With an idealistic purpose, this school was formed at a time of great uneasiness about the future of Agricultural Education. This school acknowledged the need to expand the possibility of teaching agriculture. By doing this, the scope of education becomes a lifelong experience and students have a pragmatic educational experience that follows them throughout adulthood. In High School, the curriculum is focused on agribusiness and plant and animal sciences. The Chicago High School for Agricultural Sciences pools an academic learning environment with the critical element of hands-on practice in a way that exploits student success.

Finally, this research has the potential to be duplicated in other school districts with similar programs designed around College and Career Academies, Technical Prep Academies, and Charter and Magnet Schools may be compelled to examine this study to measure their effectiveness in student achievement. Teachers all share the responsibility of preparing students for a high degree of literacy in multiple areas to prepare them for postsecondary studies and future careers. Understanding student achievement is vital in that preparation.

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Appendix A

Instrument

AES Questionnaire

1. Age: 16-20 21-25 26-30 31-35
2. Race: Caucasian African American Hispanic Asian Multi-Racial

   Other:_____
3. Gender: Male Female

Indicate the Following Traits that you learned in the Ag Academy and if you use the trait or not. Rate the traits as to how important they are from 1-5. 1 being very important, 5 being not important.	Learned in AES	Did not Learn in AES		Use still today	Don't Use Anymore	Rating of skill
1. Punctuality						
2. Communication Skills						
3. Leadership Ability						
4. Team Work						
5. Honesty						
6. Ability to Follow Instructions						
7. Work Ethics						
8. Mechanical Skills						
9. Literacy						
10. Problem Solving Skills						
11. Independence						
12. Self Motivation						

13. Integrity						
14. Dependability						

Please Indicate How much you believe that the AES helped you in the following areas.	Helped A lot 1	Helped 2	Helped Some 3	Did Not Help 4	N/A 5
15. Passing Tests					
16. Graduating High School					
17. Getting Scholarships					
18. Going to College/Tech School					
19. Being a productive member of society					
20. Choosing a Career					

Indicate your Level of Education	Completed	In Progress	N/A
21. High School Degree			
22. Technical Degree			
23. Associate Degree, 2 years of college			
24. Bachelor's Degree, 4 years of college			
25. Master's Degree			
26. Specialist Degree			
27. Doctoral Degree			

28. Do you work in the agriculture industry?

_____
_____
_____

29. Would you recommend AES Academy to all students? Why or Why Not?

_____
_____
_____

30. How did the AES prepare you for the job you have now?

_____
_____
_____

31. Please indicate the salary range for your annual income.

____$10,000-19,999____$20,000-29,999____$30,000-39,999____$40,000-49,999
____50,000-59,999 ____$60,000-69,999____$70,000-79,999____$80,000-$89,999
____$90,0000-99,999____$100,000 plus
Additional Comments:
_____
_____

Appendix B

IRB Approval Letter

Dear Mr. Nichols,

Your revisions to your protocol entitled " Agricultural Education and Student Achievement" have been reviewed. Your protocol has now received final approval as "Exempt" under federal regulation 45 CFR 46.101(b)(2).

Official notice:
This e-mail serves as official notice that your protocol has been approved. A formal approval letter will not be sent unless you notify us that you need one. By accepting this approval, you also accept your responsibilities associated with this approval. Details of your responsibilities are attached. Please print and retain.

Consent document:
Your approved, stamped consents will soon be sent by mail.

Please note that *you may not begin your research that involves human subjects until you receive the consents* with an IRB approval stamp applied. You must use copies of those documents when you consent participants, and provide a copy (signed or unsigned) for them to keep.

Expiration:
***Note that the new policy for Exempt approvals is a *three year approval*. Therefore, your protocol **will expire on August 26, 2015**. Put that date on your calendar now. About three weeks before that time you will need to submit a final report or renewal request. (*You might send yourself a delayed e-mail reminder for early August 2015.)*

If you have any questions, please let us know.

Best wishes for success with your research!
Susan

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