Teacher Perception of the Georgia Middle School Agricultural Education Curriculum and its Relationship to Secondary Agricultural Education Enrollment.

by

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Abstract

The purpose of this study was to describe teacher perceptions of the middle school agricultural education curriculum and its relationship to secondary agricultural education enrollment in Georgia. The participants in this study were middle school agricultural education teachers who had a minimum of one year of teaching experience as a middle school agricultural educator. This descriptive and correlational study utilized a quantitative non-experimental survey research design. The data were analyzed and reported utilizing a variety of statistical procedures including frequencies, percentages, means, standard deviations, mean weighted discrepancy scores, t-tests, ANOVA, and regressions. The findings, conclusions, and resulting recommendation had six primary themes including agricultural educator professional development, the Georgia middle school agricultural education curriculum, curriculum development, middle school agricultural education program experiences (classroom/laboratory, SAE, FFA), matriculation, and professional diversity.

It was concluded that the middle school agricultural education curriculum has some specific areas for improvement to best meet the educational needs of the modern student. Every curriculum standard, across all grade levels, demonstrated a discrepancy between the level of importance placed on the curriculum standard and the student level of competency upon completion. These discrepancies were analyzed and reported in the form of mean weighted discrepancy scores (MWDS). These scores provided a list of curriculum standards ranked by

MWDS and should be evaluated and addressed in order from highest to lowest. Teachers also perceived FFA experiences in middle school agricultural education to have the greatest influence upon a student's secondary enrollment decision. It was recommended that teachers understand the value and importance of the agricultural education program model and ensure that it serves as the guide for the development of curriculum and experiences in middle school agricultural education. It was also recommended that professional development opportunities, for both pre-service and in-service teachers, be provided to address curriculum concerns to ensure they meet student educational needs. Finally, it was recommended that additional studies be conducted to determine if the middle school agricultural education curriculum is meeting the needs of the modern student and its relationship to the recruitment and retention of students.

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AAAE	American Association for Agricultural Education
AG ED	Agricultural Education
CDE	Career Development Event
ELT	Experiential Learning Theory
FFA	The National FFA Organization
MWDS	Mean Weighted Discrepancy Score
NAAE	National Association of Agricultural Educators
SAE	Supervised Agricultural Experience
SBAE	School-Based Agricultural Education
USDA	United States Department of Agriculture

CHAPTER 1
INTRODUCTION

Agricultural literacy is a growing issue across the United States as more and more individuals continue to become further removed from production agriculture. A more efficient agricultural industry combined with urban expansion has and will continue to greatly contribute to this phenomenon. The need for agricultural literacy is higher than it has ever been as fewer individuals are involved in production agriculture. Currently the number of individuals who are actively involved in production agriculture has fallen to under one percent (USEPA, 2012). Almost ninety percent of the United States population is two or three generations removed from direct involvement with the agriculture industry (Leising & Zilbert, 1994). The consistent decline in the number of individuals entering production agriculture in recent years has led to a society that does not possess the level of agricultural literacy required to make informed choices regarding consumer decisions and the ability to decipher between misleading and accurate literature about the agriculture industry.

Most individuals are completely unaware of the social and economic value of the agriculture industry and how their choices as consumers affect farming practices and food security (Richardson, 1999). This is partially caused by the fact that Americans have long reaped the benefits of a successful agricultural system that can meet the needs of the country. Americans spend less than ten percent of their disposable income on food, which has contributed to a successful society (USDA, 2014). However, easy access to food in the United States has further increased the problems associated with agricultural literacy. The lack of knowledge about the

agriculture industry has resulted in a greater number of policy makers and consumers not fully understanding how agriculture affects the economy and society, than any other time in the history of the United States (Fritz & Moody, 1997). "Increasingly, society will be faced with issues at the social, economic and political interface of agriculture, which will require some basic literacy of the human designed agri-food system" (Hess & Trexler, 2011, p. 1). It is critical that individuals have a basic understanding of agriculture and realize the role that it plays in their life. Agricultural literacy is the process of being able to make informed decisions about the agriculture industry and the role that it plays within the economy and environment, while also being able to accurately defend your position when challenged with misleading information and counter arguments from other individuals who do not share the same understanding (Powell, Agnew, & Trexler, 2008).

Agricultural literacy is critical to the future growth and development of the agriculture industry, as well as the image of modern agricultural practices. Agricultural literacy requires that an individual possess an understanding of the agriculture industry and be equipped to initiate conversations about the agri-food system (National Council for Agricultural Education, 1999). The definition of agricultural literacy has changed over the years and has been expanded to include an understanding of agricultural content specifically as it pertains to various cultures (Meischen & Trexler, 2003). However a study by Anderson, Velez, & Thompson (2014) utilized the following definition of agricultural literacy, which illustrates the most comprehensive view of an agriculturally literate person.

> Agricultural literacy entails knowledge and understanding of agriculturally related scientific and technology-based concepts and processes required for personal decision making, participation in civic and cultural affairs, and economic productivity. At a

> minimum, if a person were literate about agriculture, food, fiber, and natural resource systems, he or she would be able to a) engage in social conversation, b) evaluate the validity of media, c) identify local, national, and international issues, and d) pose and evaluate arguments based on scientific evidence. (Meischen & Trexler, 2003, p. 44)

This definition of agricultural literacy includes all of the qualities necessary of an agriculturally literate individual. Efforts should be made to ensure that this accurately describes the modern day consumer. This will help to promote a positive image of American agriculture and lead to a more informed consumer population.

Another issue with agricultural literacy is that even though fewer individuals in society are directly involved in production agriculture, an increasing number of people are concerned about food production and what they perceive as proper growing methods (National Agriculture Research and Extension Users Advisory Board, 1991). This phenomenon provides an opportunity for special interest groups to shape the American perception of agriculture in order to promote personal agendas (Lichte & Birkenholz, 1993). Special interest groups are then able to create consumer concerns and ultimately alter consumer behaviors. The lack of agricultural literacy makes it difficult for consumers to determine truth from misleading information. This cycle creates consumer concerns and institutes greater challenges for the agriculture industry as a whole. Ryan and Lockaby (1996) found that agriculturally literate Americans are more likely to be involved in decisions and policies supporting the agriculture industry than those who lack agricultural literacy. These agriculturally literate individuals are critical in the support necessary to move the industry forward to meet the demands of the future.

Greater connectivity and an increase in social media outlets have made it much easier to share and disseminate information quickly to a wide variety of people around the world.

Therefore, the ability to circulate misleading agricultural information combined with a population without a sound understanding of the agriculture industry can be disastrous for the industry as a whole. Rapid urbanization and advancements in technology have caused society to abandon their agricultural roots in order to keep pace with today's modern lifestyle (Leising, Pense, & Igo 2001). Americans are no longer equipped with the knowledge necessary to decipher misleading information and this creates a situation where it becomes easy to paint a negative image of production agriculture, while also taking advantage of the modern consumer. Organizations have used this situation to increase consumer uncertainty over the years (Leising, Igo, Heald, Hubert, & Yamamoto,1998).

The majority of citizens in the United States still have a simplistic view of agriculture and are only able to relate agriculture with farming and ranching (Blackburn, 1999). Most of these individuals do not even realize the important role that agriculture plays in their day-to-day life (Richardson, 1990). This lack of agricultural literacy must be overcome in order to protect the integrity of the agriculture industry as well as establish a population of well-informed consumers. As the world's population steadily increases, it is critical to attract young people into the industry to meet growing demands. The future success of the agriculture industry lies in the hands of younger generations and they must be properly educated so that they understand the need for their role as an active participant in the food and fiber industry (Helsel & Huges, 1984). This focus on agricultural education will initiate a process of widespread agricultural literacy that will begin the school systems across the country.

Agricultural education programs and students involved in agricultural activities through the FFA (National FFA Organization) continue to grow across the United States. This educational outlet is the perfect opportunity to educate young people about agriculture and

prepare them to enter the economy as informed consumers. This educational experience in agriculture would help to address the issue of agricultural literacy that currently faces today's agriculture industry. However, in order for this educational outlet to be effective, students must first be drawn to the idea of learning about agriculture and how it plays a critical role in their lives and the economy. The methods that are utilized to teach students about agriculture have a significant influence upon their attitude toward learning the material (Okiror, Matsiko, & Oonyu, 2011). It is critically important to gain a better understanding of how to attract students to this type of educational experience and how to effectively design the curriculum to facilitate enthusiasm and learning. This understanding will assist in the development of an agricultural education curriculum and FFA programs that will meet the needs of both the modern student and the overall goal of widespread agricultural literacy.

Middle school agricultural education programs are some of the earliest forms of formal education in agriculture that a student can receive in the United States. Agricultural Education in middle school provides students with exposure to the agriculture industry and helps them to understand the requirements of careers within the field (Frick, 1993). The National FFA Organization formally introduced middle school agricultural education during the National Convention of 1988 (Rossetti, Padilla, & McCaslin, 1994). Middle school courses in agriculture and natural resources provide students with the opportunity to learn about the agriculture industry at a young age, while also serving as a recruitment tool for secondary agricultural education courses and FFA programs. Middle school agricultural education offers a unique opportunity to provide students with a hands-on learning opportunity in agriculture that will contribute to the solution of agricultural literacy and promote continued involvement in the agriculture industry from a diverse population.

Agricultural education courses allow students opportunites to explore a variety of agricultural careers. Career exploration is beneficial for the future of the student and the agriculture industry as a whole (Faulkner, Steward, & Baggett, 2006). Most elementary and middle school teachers agree that educational experiences in agriculture help students understand the important role that agriculture, food, fiber, and natural resources plays in their lives (Trexler, Johnson, & Heinze, 2000). Courses in agricultural education should provide students with educational experiences aimed at increasing agricultural literacy and providing students with the opportunity to explore the many career areas in the agriculture industry (Faulkner, Steward, and Baggett, 2006). This is important because students begin to formulate many career interests and long-term goals during this stage of life and therefore should have exposure to the opportunities available to them in the agriculture industry (Barrick & Hughes, 1993).

Middle school courses in agricultural education are critical because they can ensure that students are taught correct information about the industry before they are bombarded with misleading facts and information later in life. This will help to establish a more informed population and help to maintain the positive image of American agriculture. Courses at this level may also help to recruit students into secondary agricultural education programs, thus continuing their understanding and involvement in the agriculture industry. Middle school courses in agriculture, combined with the FFA programs, provide students with the opportunity to learn about agriculture through a variety of different educational outlets. Students have the opportunity to participate in experiential learning opportunities that include classroom/laboratory experiences, supervised agricultural experiences, and involvement in FFA educational/leadership activities. These educational experiences are weaved throughout the curriculum and provide both rigor and relevance to a student's education.

Agriculture courses also integrate academic concepts allowing students understand how to apply the concepts that they are learning in their academic courses in real world situations. By utilizing a variety of concepts and epistemologies from one content area such as agricultural education, a student's educational experience can also be enhanced in another area such as math and science (Boix-Mansilla, Miller, & Gardner, 2000). This integrated educational approach may help a student to see the big picture and understand a concept from multiple perspectives along with developing a greater understanding of other content areas and how they are applied (Boix-Mansilla et al., 2000). This cross-curricular approach will help enrich their understanding of agricultural concepts and the critical thinking process (Ivanitskaya, Clark, Montgomery, & Primeau, 2002).

Middle school agricultural education programs are becoming very popular and widespread across the country with over 1,500 middle school agricultural education teachers providing instruction to more than 70,000 middle school students enrolled in agricultural education courses (Rayfield & Croom, 2010). However, agricultural education as a whole still has a substantial growth potential. Agricultural education across the United States is currently only providing educational opportunities for a small portion of students who have agricultural education courses available to them (Myers, Dyer, & Breja, 2003). Middle school agricultural education courses and FFA programs have the potential to help solve this problem and could serve as a recruitment strategy for secondary programs. Middle school agricultural education programs have become very popular across the country and represent one of the fastest growing sectors of agricultural education (Hillison, 1994). This growth indicates the importance and value being placed upon these educational programs. Teachers and researchers in agricultural education may be able to work together to gain a better understanding of middle school

agricultural education programs and its relationship to the recruitment and retention of students in secondary agricultural education courses. This knowledge may lead to overall program growth and expansion of middle school and secondary agricultural education programs across the United States.

Enrollment in agricultural education has fluctuated over the past few decades and is currently on the rise. It is essential to search for methods of reducing this fluctuation and maintaining a strong positive growth trend. Middle school programs have been identified as significant influences upon the overall growth, development, and stabilization of enrollment in secondary agricultural education programs. These programs serve a vital role in the recruitment and retention process and ultimately contribute to the overall success of agricultural education (Cupp & Weaver, 1994). Herren and Denham (1990) found that effective middle school agricultural education programs are essential in the recruitment of students within secondary agricultural education programs. However, the key to increasing enrollment at the secondary level is to provide and ensure quality agricultural education programs for students during their middle school education.

Enrollment in agricultural education is an essential component of being able to effectively address the agricultural literacy issues across the United States. Many different factors contribute to enrollment issues, which can be detrimental to the overall goal and mission of agricultural education programs. Knight (1987) found a variety of factors that negatively affect enrollment in agricultural education programs including the emphasis on production agriculture, increasing academic requirements, perception of agriculture programs, and student stereotypes. It is important to address these issues because the image of agricultural education has a direct impact upon a student's decision to enroll in a course (Willerman & Swanson, 1953).

The best way to determine how to increase enrollment, is to look to the target population for the answer. This is important because "agriculture is too important a topic to be taught only to the relatively small percentage of students considering careers in agriculture and pursuing studies in agriculture" (Reis & Kahler, 1997, p. 38). The key is a strong middle school curriculum that provides students with the experiences that have the greatest influence on enrollment in secondary agricultural education programs, while also ensuring the curriculum is designed to meet the changing needs of the modern learner.

Middle grade adolescent learners are at a unique developmental stage where they are seeking a positive self-concept and a higher self-esteem. These learners will begin to attempt to find areas where they fit in and can assist them in defining who they are as a learner and a person. Providing agricultural education during these years is critical because it helps move the understanding of the agriculture industry from the abstract realm to a more concrete understanding. This educational process is aligned with the educational and psychological needs of this age group of students (Fritz & Bell, 1993). Educational experiences that occur during this formative period of a student's life will ultimately affect their self-efficacy; altering their life course because of individual choices they will make and achievements attained (Bandura, 1986). This perceived efficacy and academic orientation will have a direct affect on their career decisions in the future (Bandura, Barbaranelli, Caprara, & Pastorelli, 2001). Students need to receive education in agriculture during this time so that they will be more informed consumers throughout their lives, but also to increase the possibility that they will continue enrollment in agricultural education throughout their educational careers.

Doese and Miller (1988) determined that the majority of students in eighth grade had no intentions of enrolling in an agriculture course at the secondary level. Middle school programs

can help address this issue and increase the number of students who plan to enroll in a secondary agricultural education course. The first step in effectively recruiting and retaining quality students in agricultural education courses is to expose them to exploratory type courses in agriculture during their middle school education (Hedrich, 1985). These courses may provide students with an early understanding of agriculture and potentially lead to continued study. However, in order to accomplish this initiative, middle school agricultural education programs must meet the needs of each learner and be designed to provide students with the educational experiences they desire. This may provide students with a positive experience, which will ultimately lead to increased enrollment and retention of students as they transition into the subsequent secondary agricultural education program. This study described teacher perceptions of the middle school agricultural education curriculum and further describes its relationship to student enrollment in secondary agricultural education programs.

Problem Statement

There is an evident lack of research on middle school agricultural education. This research gap is further widened when it comes to studying the relationship between enrollment in middle school agricultural education programs with students in grades six through eight and subsequent enrollment in secondary agricultural education programs with students in grades nine through twelve. This is a critical area for research in agricultural education specifically as it pertains to future program growth and development. The solution to this problem is critical in the advancement of agricultural education and the research initiatives established by American Association for Agricultural Education (AAAE). This study assists in the solution to research priority number four which is meaningful, engaged learning in all environments (Edgar, Retallick, & Jones, 2016). More specifically, this study focuses on the solution to the research

priority question, which states, “How can delivery of educational programs in agriculture continually evolve to meet the needs and interests of students?” (Edgar, Retallick, & Jones, 2016, p. 39).

Middle school programs were established to provide introductory instruction in agriculture for students at a younger age. The goal of this instruction is to provide agricultural education to all students in an effort to increase agricultural literacy, but also to increase enrollment in secondary agricultural education programs. The idea is that if students are introduced to agricultural education at a younger age and have a positive learning experience, then they will be more likely to enroll in a course at the subsequent secondary program within that county. However, there has been little research effort on the middle school agricultural education curriculum and its relationship to secondary enrollment.

Many individuals recognize the true value and importance that courses in agricultural education can have on a student’s educational experience. The successful integration of an agricultural education curriculum within a school will help students to learn through experiential learning opportunities, a community-driven curriculum, and application to real-world problems (Wehlage, Newmann, & Secada, 1996). This is critical to the future success of every student regardless of his or her future career or educational goals. However, in order to reach more students, it must first be determined how to attract them into agricultural education programs and courses. Middle school agricultural education is the first step in this equation and must be carefully evaluated and studied to ensure continued effectiveness. Most students in Georgia have the opportunity to enroll in an agricultural education course during their secondary education. However, the majority of these students choose not to enroll when making their course selection at the end of their eighth grade year. If the goal of the middle school agricultural education

program is to recruit and retain students, then this issue must be further investigated and possible solutions identified.

It is critical to determine what experiences have the greatest influence upon a student's decision to continue enrollment as they transition from middle school to secondary agricultural education. It is also important to evaluate the middle school agricultural education curriculum to ensure that it is meeting the needs of the modern student. This will allow the agricultural education community to better understand the role of the middle school program and its relationship to enrollment trends in secondary agricultural education. The results of this study identified the areas of the middle school agricultural education curriculum that needed attention, as well as described the relationship that the middle school agricultural education curriculum had with secondary enrollment as perceived by middle school agriculture teachers. The results of this study may contribute to stronger middle school agricultural education programs that are tailored to the learning needs of the modern student, while also describing the perception of teachers regarding the experiences involved in increasing overall secondary enrollment in agricultural education across Georgia. The findings of this study can also be used by other states to meet the needs of their students and hopefully lead to increased enrollment in agricultural education programs across the United States.

Purpose and Objectives

The purpose of this study was to describe teacher perception of the middle school agricultural education curriculum and its relationship to enrollment in secondary agricultural education programs. Seven research objectives were identified to guide the study:

1. Describe the personal characteristics of middle school agricultural education teachers in the State of Georgia.

2. Describe the perceived importance of the Georgia Department of Education State Standards for middle school agricultural education curriculum by teachers.
3. Describe the perceived level of student competence on the Georgia Department of Education State Standards for middle school agricultural education by teachers.
4. Describe middle school agricultural education teacher's perceptions on how classroom/laboratory experiences, FFA experiences, and SAE experiences are related to a student's decision to enroll in a high school agricultural education course.
5. Determine the mean weighted discrepancy score by the teacher's perception of importance of the curriculum standard and the teacher's perception of student competence on the standard.
6. Describe mean weighted discrepancy scores by teacher's personal characteristics.
7. Describe teacher's perceptions of the influence of the experiences by teacher's personal characteristics.

These research objectives provided the data necessary to gain a better understanding of the middle school agricultural education curriculum and its relationship to secondary enrollment in agricultural education. This study subsequently provided the information necessary to evaluate current middle school agricultural education programs to determine if they are meeting the needs of the modern student. Furthermore, this research assisted in closing the literature gap in enrollment issues and the role that middle school agricultural education has in that process. This provided teachers with the opportunity to evaluate the middle school agricultural education curriculum and indicate the level of importance and level of competence among each state standard within the curriculum. Teachers also provided their perception of the level to which each experience within middle school agricultural education influences continued enrollment as

a student transitions into high school. The collected data will be used to strengthen current programs and promote growth and development, while meeting the specific objectives and goals of agricultural education.

Significance of the Study

Agricultural education is a unique educational experience that provides students with the opportunity to make critical links between academic learning and real-world application. Agricultural education helps students to have a successful future by developing their potential for premier leadership, personal growth, and career success (National FFA, 2016a). Agricultural education can even assist in developing a more agriculturally literate society that can make informed consumer decisions, while also fostering the growth and development of the agriculture industry as a whole. However, agricultural education can do nothing without developing a curriculum to meet the learning needs of the modern student and being able to attract students to enroll within the programs across the United States.

Enrollment in agricultural education is essential and without it, the goals and initiatives of the program will never come to fruition. Often times, research in agricultural education tends to focus upon program issues or teacher issues, but leaves out the critical component of student enrollment. Without enrollment within agricultural education programs, none of the other issues will even matter or occur. There is a lack of literature and research on student enrollment specifically focused upon the middle school agricultural education curriculum and how it fits into the enrollment equation. There is also a need for research surrounding the middle school curriculum in regards to student competency among curriculum standards. This study assisted in providing the agricultural education community with an understanding of the middle school agricultural education curriculum and its relationship to secondary agricultural education

enrollment. This was accomplished by listening to the middle school agricultural education teachers and allowing them to describe what they felt were the most important experiences and learning objectives in the middle school agricultural education curriculum and how competent students were upon completion of the courses. Teachers also reflected on the curriculum and experiences in middle school agricultural education and indicated their perception of how it is related to secondary enrollment. This knowledge can be put to use by researchers, state leaders, and teachers in agricultural education to aid in stabilized program growth, student retention strategies, and development of programs designed to meet the educational needs/desires of the modern student.

Today's students are much different than past generations and it is critical to understand their individual learning needs in order to attract them to enroll in agricultural education courses. There is a lack of research/evidence on the effectiveness of agricultural education in attracting young people to all areas of agriculture (Mercier, 2015). Students today are progressive learners and society has made considerable changes specifically in regards to communication advancements and personal access to technological devices (Caton-Rosser, Looney, & Schneider, 2014). This means that learners today require high-level cognitive abilities and more individualized instructional design (Roberts, Harder, & Brashears, 2016). Millennials have always had access to the Internet, which has led them to be described as "detached from institutions and networked with friends" (Taylor, 2014, p. 112). It is evident that student interests have changed over the years and there is a need to explore the items that motivate students and determine how they align with agricultural education courses and the current curriculum (National Research Council, 2009). This understanding is critical in order to effectively recruit students into agricultural education courses and ensure that the curriculum is designed to meet

their needs. It is also essential to listen to the students and determine what their educational needs and desires are so that they will continue enrollment and assist in the spread of agricultural literacy in every community and solving the agricultural issues of the future.

It is critical to understand the relationship that middle school agricultural education has on secondary agricultural education enrollment decisions. The understanding of this phenomenon will assist in the overall growth and development of agricultural education, which is essential to achieving the goal of establishing an agriculturally literate society. The number of students enrolled in agricultural education programs is critical to the support of key stakeholders. This support, both in monetary and political form, is essential for the growth, development, and overall success of agricultural education in Georgia and across the United States. Therefore, it is imperative to close the literature gap that exists regarding enrollment in agricultural education courses and the relationship that middle school programs has on that decision. Student enrollment is the foundation by which all of the goals, initiatives, and support of agricultural education are built upon. This is why it is imperative that the middle school agricultural education curriculum be carefully evaluated to ensure student needs are met and the probability of continued enrollment in agricultural education remains high.

Agriculture has a tremendous impact on Georgia's economy providing approximately $74.35 billion each year. Agriculture is also the leading employer within the state of Georgia with one in seven individuals working within the field in some capacity. Georgia also has a large amount of farmland spread across the state with 42,257 farms operating on over 9.6 million acres of land (Georgia Farm Bureau, 2016). Georgia has a thriving agriculture industry that has been evident throughout the history of the state. Therefore, it is critical to the future success of Georgia's economy that students receive quality instruction in agriculture so that they can fill the

growing demands of the agriculture workforce. Agricultural education provides students with the opportunity to explore potential careers in agriculture and gain the hands-on experience and knowledge required to be competitive within the field. Agriculture is the number one employing industry in Georgia and it is imperative that students understand the role that agriculture has on their life as well as the economy of the state and country. Students must be prepared to fill positions in agriculture in all areas from production to marketing. They must also be prepared to solve the complex problems that agriculture will face over the next few decades and the unknown problems of the future. This will require an extensive knowledge of the agriculture industry as well as how math and science are applied to solve problems.

This knowledge of agriculture and how to apply science and math will be critical in solving the world's agricultural problems in the near future. The world population continues to grow at an alarming rate and is expected to reach 9.7 billion by the year 2050 (Buttriss, 2010). "As our global population grows to a projected nine billion people by 2050, the non agriculture population has little to no understanding of the complexities involved with sustaining a viable agriculture system" (Doerfert, 2011, p. 8). Predications indicate that it will be necessary to produce 50-100% more food in order to meet the demands of the population increase (Agree, 2012). This growth will have to be done on less land and fewer resources than are currently available due to the necessary urban expansion required to support the population. It is essential that individuals are adequately prepared to meet the demands of the growing population specifically as it relates to the agriculture industry.

Agricultural education programs must equip students with the knowledge and skills required to fill the positions necessary for an uncertain future. This requires an application-based approach to education that allows students to link academic learning to solving real problems.

Agricultural education not only accomplishes this goal, but will also assist in preparing students to enter a global marketplace with the knowledge and skills required to feed the growing population. This further justifies the need to understand how to attract students to agricultural education programs and provide them with a curriculum designed to meet these goals. This will aid in the spread of agricultural literacy and adequate food distribution, as well as preparing students to fill the positions necessary to ensure economic growth across the United States. Not every student will begin a career in agriculture, but everyone will become consumers and voters. Therefore, agricultural literacy is critical for the entire population and must be something that everyone values in order to ensure that the demands of the future can be met boldly. The formal education of a student is incomplete if they do not fully understand how agriculture including crops, plants, and animals are essential for life (Moore, 1987).

Enrollment and the trends associated with enrollment have generally been inconsistent throughout the history of agricultural education. This inconsistency has made it difficult to fully understand the phenomenon and how to properly shift to a more consistent trend. Breja and Dyer (1999) determined that enrollment trends among students in agricultural education have fluctuated greatly in the past, specifically as it relates to matriculation of students between middle school and secondary agricultural education programs. There is little research on the middle school agricultural education curriculum to determine the role that it plays in the overall enrollment trends of agricultural education. As middle school agricultural education continues to gain momentum, it is critical to focus research initiatives on how middle school programs factor into enrollment trends and overall student matriculation. Middle school agricultural education programs could play a critical role in the growth and development of agricultural education.

Often times, enrollment has been viewed externally by looking at the factors/data that relate to enrollment decisions and matriculation. However, there is a lack of research that breaks enrollment/matriculation down and tries to gather data internally from the teacher. While factors affecting enrollment are important to investigate, research should begin to focus upon the educational experiences that teachers feel are the most important for their students. Teachers understand their students learning needs and can best reflect upon their needs and whether the curriculum is successfully meeting these needs. The educational needs of students are constantly changing with each new generation and it is counter-productive to apply strategies associated with data provided by previous generations of students. In order to truly understand enrollment and matriculation, data must be collected from current students on a consistent basis and applied appropriately. By investigating the issue from this angle, the teacher is able to provide critical information regarding their students and the overall effectiveness of the middle school agricultural education curriculum at meeting their needs, as it pertains to both the course and continued enrollment. This research approach will provide data on the issue from the individuals ultimately responsible for the education of the students on a day-to-day basis. Only the teachers of the current students in agriculture courses can provide the data necessary to understand the effectiveness of the current curriculum and what they feel has the greatest contribution to continued enrollment beyond the middle school program.

The challenges that the agriculture industry will face in the next few decades are far too great to ignore the role that agricultural education could have on the solution to these challenges. Students need to understand the careers in agriculture and how they can apply their interests within the field. Students must also realize the scientific nature of agriculture and how they can utilize the knowledge gained from both agricultural education along with their academic

curriculum to solve the problems of the future. However, before agricultural education can accomplish any of these initiatives, students must first enroll and remain in the courses.

The significance of this problem is greater now than it has ever been before. The agriculture industry is in need of great leaders and problem solvers who can work together to ensure that the world can be fed. The agriculture industry is changing and so is the modern student. It is time to focus upon the educational needs of today's agricultural education students and ensure that they are getting the type of educational experience that they need to continue their studies in agriculture. The students that are being educated today will determine the future of the world. It is imperative that agricultural education provides students with a quality school-based agricultural education that will assist in widespread agricultural literacy, the development of an informed consumer base, and a workforce ready to meet the challenges that will face the agriculture industry in the near future.

The solution to this problem is critical in the advancement of agricultural education and the research initiatives established by American Association for Agricultural Education (AAAE). The AAAE periodically establishes a research agenda regarding contemporary issues in agricultural education that need solutions given current conditions within programs, education, and cultural shifts. This is a group of faculty and graduate students who conduct social science research within the context of food, agriculture, and natural resources. These individuals strive to bridge the gap between the scientific research and the general public who need to understand and apply this information on a daily basis. A selected panel of individuals within this field identified twenty-five priority research questions, which were further sub-divided into seven research priorities. These priorities serve as the current research agenda for agricultural education and

should guide research strategies and practices for the given years (Roberts, Harder, & Brashears, 2016).

The significance of the study is further justified by this established research agenda. This study assists in the solution to research priority number four which is meaningful, engaged learning in all environments (Edgar, Retallick, & Jones, 2016). More specifically, this study focuses on the solution to the research priority question, which states, "How can delivery of educational programs in agriculture continually evolve to meet the needs and interests of students?" (Edgar et al., 2016, p. 39). This research priority and question was the focus of this study as it seeks to determine the educational needs and desires of students currently enrolled in agricultural education programs. The results of this study allow researchers to understand the educational needs and interests of students so that programs can be appropriately tailored to meet these specific needs. This can be used in the creation of new professional development opportunities for teachers so that they can better help students reach a high level of competency among all curriculum standards through new innovative strategies. It is critical to understand that the educational needs and desires of students have changed drastically in recent years and will continue to change each year into the future. Therefore, it is important to ensure that researchers maintain a current understanding of student needs and desires so that agricultural education programs will continue to attract students. The results and implication of this study are significant as it pertains to the research initiatives of AAAE and to ensure continued growth/enrollment. This consistent growth and development is essential for the future success of agricultural education.

This study provided teachers with the opportunity to share their perception of middle school agricultural education regarding the level of importance and the resulting level of

competence among students at the conclusion of the course/program. Teachers also described their perception of the experiences in the middle school agricultural education curriculum and its relationship to a student's decision to continue enrollment beyond the middle school program. This information can be used to make recommendations to the agricultural education community regarding how to develop a quality middle school agricultural education program that will promote agricultural literacy, as well as effectively recruit and retain students.

Middle school agricultural education presents students with a basic understanding of the agriculture industry, but it also serves a much greater purpose including promoting increased agricultural literacy, career exploration in agriculture, and above all serves as a recruitment tool for the secondary agricultural education program (Gibbs, 2005). It is hypothesized that teachers can provide critical data regarding the middle school curriculum and its relationship to secondary enrollment, which could then be used to evaluate and re-design as necessary. Previous research on enrollment in agricultural education has primarily focused upon enrollment patterns and barriers to enrollment (Breja, Ball, & Dyer, 2000). Therefore, a lack of focus upon why students decide to enroll in agricultural education and the connection to middle school agricultural education has left a gap that must be properly addressed. It is critical that the factors that contribute to enrollment and continued enrollment be evaluated to both meet the overall goals of agricultural education and to ensure a curriculum that is designed to meet the demands and needs of the modern student. This evaluation allows agricultural educators, researchers, and program staff to understand the educational needs of the modern agricultural education student and make the appropriate changes necessary to meet these needs. By better understanding the teacher perception of the middle school agricultural education curriculum, we can make the changes necessary to meet the needs of today's learners and increase the probability of a positive

experience that will ultimately lead to increased and continued enrollment. This will also help to decrease the literature gap regarding secondary agricultural education enrollment and the significance of the middle school agricultural education program in that process.

Definition of Terms

1. Agricultural Educator: An individual who provides a variety of educational experiences within the field of agricultural education (Phipps, Osborne, Dyer, & Ball, 2008).
2. Agricultural Education: Educational instruction in the field of agriculture that provides students with knowledge of the agricultural industry by developing their potential for premier leadership, personal growth, and career success through classroom/laboratory experiences, FFA involvement, and supervised agricultural experience programs (National FFA, 2016a).
3. Agricultural Literacy: "Agricultural literacy entails knowledge and understanding of agriculturally related scientific and technology-based concepts and processes required for personal decision-making, participation in civic and cultural affairs, and economic productivity" (Meischen & Trexler, 2003, p. 44).
4. American Association for Agricultural Education (AAAE): The AAAE is a professional society for faculty and graduate students who have specific research interest in agricultural communication, education, extension, and leadership. These individuals work closely together to conduct social science research within the areas of food, agriculture, and natural resources (Roberts, Harder, & Brashears, 2016).
5. American Association for Agricultural Education National Research Agenda: The AAAE periodically establishes research priorities regarding contemporary issues in agricultural education. These priorities serve as the research agenda for agricultural education and

should guide research strategies and practices for the given years outlined by the agenda (Roberts, Harder, & Brashears, 2016).

6. Career Development Event: (CDE) provide students enrolled in agricultural education with the opportunity to put the knowledge and skills that they have learned in their agricultural education course to the test against other students. These events teach students how to effectively communicate, think critically, and provide a real-world connection between classroom/academic concepts and application (National FFA, 2016b).
7. Curriculum: A set of experiences, courses of study, and activities which are outlined by a specific educational program that students must engage in order to accomplish the desired educational program objectives (Von Crowder, 1997).
8. Experiential Learning: Educational approach, which helps students learn by strengthening the critical links between education, work, and personal development. Experiential learning provides students with the opportunity to think critically as they apply what they have learned to real situations (Kolb, 1984).
9. Middle School Agricultural Education: Educational instruction in the field of agriculture that provides students with knowledge of the agricultural industry specifically designed for students enrolled in grades 6-8.
10. Millennial: Individuals born between 1983 and 2002. This range was established based upon the increase in births that began in 1984 and the cultural and political shift that occurred prior to 2002 as a result of terrorism (Carlson, 2008).
11. National FFA Organization FFA: (formerly known as Future Farmers of America) An intra-curricular educational experience for students in grades sixth through eighth that

provides experiential learning opportunities centered around leadership. FFA is one of the three components of the total agricultural education program and allows students to apply the knowledge and skills that were acquired in their agricultural education course (National FFA, 2016c).

12. Georgia Performance Standards: A set of learning standards that must be covered within each content area. These standards are a concise and direct roadmap, which should be utilized to develop course instruction and facilitate teaching strategies (Woods, 2016).
13. School-Based Agricultural Education (SBAE): Formal instruction in agriculture, which is offered within a public school setting. Instruction contains learning opportunities for students in each area of agricultural education, including classroom/laboratory instruction, FFA, and SAE (Phipps et al., 2008).
14. Secondary Education: High school education or education commonly occurring between grades nine through twelve across the United States.
15. Smith-Hughes Act (1917): Federal legislation that established agricultural education as courses in public school across the United States. This act also provided the funding required to start these programs and foster growth and development (Phipps et al., 2008).
16. Supervised Agricultural Experience (SAE): A planned project/program that is completed outside the normal classroom/laboratory instruction time on a specific area of agriculture that is selected by the student. This provides students with a hands-on learning opportunity, which allows them to apply what they have learned in class to a real-world situation. Students must keep accurate and detailed records and the entire project/program is supervised by the instructor (Phipps et al., 2008).

17. Vocational Education: Educational experience that provides students with experiential and work-related experiences. Agricultural education was commonly referred to as vocational education prior to the 1980s.

Limitations of the Study

There are specific limitations that have the potential to limit the study and the ability to generalize findings to the entire population under study. Most of these limitations are an intrinsic part of utilizing a questionnaire and were carefully monitored and addressed as needed to ensure the collection of reliable data. There are many factors that can limit any study, however the following were determined to be possible limitations to this study as it specifically pertains to the ability to impact the quality of collected data and answer the overall research question.

1. Non-response error could limit the study by negatively affecting the internal validity of the questionnaire. This limitation was addressed by providing a clear rationale for the study to participants and follow-ups used as necessary to encourage all members of the sample to participate.
2. There may be unknown conditions or issues at the schools selected to participate in this study that may affect the data collected.
3. All participants in this study are agricultural educators from Georgia and teach according to the Georgia agricultural education curriculum. This limits the findings of this study to teachers within the State of Georgia, however the same methods and instrument design can be used in other states.
4. One regression per standard in each grade level was conducted to best understand which teacher personal characteristics may contribute to differences in MWDS. Each regression considered the same teacher characteristics; therefore, with such a large number of

regressions this may contribute to increased Type I error inflation. This error inflation happens when evidence falsely supports the rejection of the null hypothesis (Duffy, 2010). Despite this potential limitation, the regressions reveal crucial information to this study and provide an understanding of which teacher characteristics are related to discrepancies in MWDS.

It is critical to understand the role that limitations can play in a study and how that can affect the data collected. The limitations outlined in this section are inherent to the specific problem and population under study. However, each limitation was carefully analyzed and addressed to ensure that the data collected were an accurate reflection of the population and contribute to the solution of the research problem.

Basic Assumptions

When evaluating the assumptions of this study it is critical to understand that without them, the research problem itself could not even exist (Leedy & Ormand, 2010). The assumptions of this study are similar to any study that includes the utilization of a questionnaire to gather data on a specific population.

It is assumed that all participants responded to each item honestly and appropriately. The researcher assisted in this area by providing clear and specific instructions to all questionnaire participants. This assisted in limiting misunderstanding and increased the probability of an accurate response from all participants. It was also assumed that all teachers who completed the questionnaire had taught at least one year of middle school agricultural education prior to completing the questionnaire. This was addressed by selecting participating schools where a teacher had been teaching for at least one year. The researcher assumes that the sample drawn for this study was an accurate reflection of the entire population under study. This was appropriately

addressed by using a simple random sampling method, which was calculated using Cochran's (1977) sample size formula for continuous data and minimum return sample size. The assumptions outlined in this section are inherent to the specific problem and population under study. However, each has been carefully analyzed and addressed to ensure that the data collected are an accurate reflection of the population and contribute to the solution of the research problem.

Chapter Summary

Chapter 1 provided a justification for the need and purpose of the study. Agricultural education plays an important role in the establishment of widespread agricultural literacy and an informed consumer base. This is essential in the recruitment and education of students who will be the leaders ready to solve the problems that will face the agriculture industry in the near future. This study focused on the middle school agricultural education curriculum and its relationship to the recruitment and retention of students as they transition into their secondary education.

The middle school agricultural education curriculum provides students with experiences in many different areas of agriculture through an experiential learning method. These experiences help students to understand the role of agriculture within their daily lives and helps them to begin to understand the possible careers in agriculture. However, the needs of the modern student are consistently changing and therefore, the agricultural education curriculum and the training of teachers must also change. This study examined the middle school agricultural education curriculum, as perceived by the teachers, to determine areas of weakness and possible professional development/training needs. It is critical to ensure that the curriculum

is best designed to meet the needs of the modern learner and that teachers are adequately prepared to meet these needs.

The significance of this study is based on the problem of agricultural literacy throughout the United States. Agricultural education programs are an excellent resource for combating this issue and efforts must be made to ensure that programs remain relevant for the modern student. The purpose of this study was to evaluate the middle school agricultural education curriculum and further examine its relationship to secondary enrollment as perceived by the middle school teachers. This study was also designed to close the literature gap that exists in regards to middle school agricultural education, the curriculum, and the relationship to secondary enrollment. This is critical in the development of individuals who are adequately prepared to solve the complex problems that will face the agriculture industry in the near future. The following chapter provides a description of relevant literature, as well as the theoretical foundations and conceptual model that served as the guide for this study.

CHAPTER 2
LITERATURE REVIEW

AAAE Research Agenda Research Priority

The American Association of Agricultural Educators (AAAE) is a professional organization comprised of university faculty and graduate students with specific research interest in agricultural communication, education, extension, and leadership. AAAE members seek to bridge the research gap between the scientists and the general public with the goal of developing solutions to current and future challenges facing the agricultural industry (Roberts, Harder, & Brashears, 2016). The need for solving these complex problems in agriculture led the organization to develop research priorities in 2006, which provided coordination and communication regarding research conducted by AAAE members (Osborne, 2007). A second version of the research priorities was published in 2010 (Doerfert, 2011). The most current version was developed in 2015 and is the third edition of the AAAE National Research Agenda (Roberts, Harder, & Brashears, 2016).

The National Research Agenda committee utilized a four-stage Delphi process to identify, categorize, and prioritize specific research priorities and questions to guide research practice for the years 2016-2020. The Delphi panel included ten active AAAE researchers and nine stakeholders who have specific interest and positions necessary to understand the challenges and problems that could potentially be addressed by AAAE research initiatives. The panelists identified twenty-five specific research questions that were divided into seven research priorities. Six of these research priorities were among those included in the second edition of the National

Research Agenda, with the addition of one new research priority. The priorities outlined in the newest edition of the research agenda should guide research practices in specific areas including (1) Public and Policy Maker Understanding of Agriculture and Natural Resources, (2) New Technologies, Practices, and Products Adoption Decisions, (3) Sufficient Scientific and Professional Workforce That Addresses the Challenges of the 21st Century, (4) Meaningful, Engaged Learning in All Environments, (5) Efficient and Effective Agricultural Education Programs, (6) Vibrant Resilient Communities, and (7) Addressing Complex Problems. Based upon expert opinion within the panel, ten priority research questions were designed for focused research efforts between 2016-2020. Research within agricultural education should consider the research priorities outlined within the agenda to guide and develop relevant research (Roberts, Harder, & Brashears, 2016).

The National Research Agenda serves as the guiding document for research among members of the American Association for Agricultural Education (AAAE). It is intended to be used by internal audiences including faculty and graduate students to guide research efforts for a five-year period. However, it can also be utilized by external audiences including university administration, funding agencies, and stakeholder groups to better understand the rationale for the focused research efforts within agricultural education. The research priorities presented in the agenda represent the identified needs and key issues facing food, agriculture, and natural resource systems relevant during that period of time (Roberts, Harder, & Brashears, 2016).

The agenda also serves a guiding document for research so that the profession can collaborate and collectively address the most pressing issues of the time. This establishes a nation-wide agenda that allows researchers from all states to conduct systematic and focused research that will provide mutual benefit for the entire profession and everyone involved in the

growth and development of the food, agriculture, and natural resource systems. The AAAE National Research Agenda served as a guiding document for the development of this study with specific efforts in research priority #4: Meaningful, engaged learning in all environments. This study sought to address this research priority by evaluating the current middle school agricultural education curriculum and ensuring that it is meeting the needs of the modern student. The study further contributes to this priority by describing teacher perception of the middle school agricultural education program and its relationship to continued enrollment as students enter their secondary education. This is critical because we must ensure that agricultural education programs continually evolve to meet the needs and interests of the modern student. This includes an evaluation of the curriculum to ensure that this is taking place. Ensuring that the curriculum meets the needs of students will ultimately lead to program growth and development, as well as increased enrollment in agricultural education programs (Roberts, Harder, & Brashears, 2016).

Research priority #4 in the AAAE National Research Agenda demonstrates the need for continued research efforts in the development of meaningful and engaged learning environments. Effective teaching has continued to be restrained by factors including time, materials, and technological advancements. There is currently a lack of research regarding how effective agricultural education is at attracting young people to all areas of agriculture. This research gap is further widened when it comes to curriculum development, program implementation, and student monitoring (Mercier, 2015).

A meaningful learning environment should incorporate the learner within the process, instead of simply being the recipient of information. Problem solving is an excellent strategy within this area that teaches students how to apply what they have learned. It is also important for agricultural education to prepare students for employment by teaching the necessary skills

including interpersonal communication skills, critical thinking skills, problem solving skills, and computing skills (National Research Council, 2009). Meaningful learning for the modern student should also include the opportunity to network and learn from one another. Technology and online communication is an important part of the lives of modern students and a critical component of a well-designed 21st century education, which includes collaboration, communication, critical thinking, and creativity (Greenwood, 2007).

Two of the primary challenges that face agricultural education today include the need for a substantial increase of the next generation to be interested in food and agriculture and the wide-spread need to educate those that lack the understanding of the food and agriculture systems (Mercier, 2015). In order to face these challenges with success, educational systems must change the way things have always been done in order to be prepared to meet the educational needs of a changing student and American society. Today's diverse classrooms require an evaluation of the current curriculum and attention to teaching practices. Traditional educational practices need to be reorganized in order to meet learner needs with any level of success. An increased understanding of learning and teaching environments is necessary in the development agricultural education programs that can meet the educational needs of the modern student, while also preparing them to solve the complex agricultural problems of the future (Woolfolk, 2010).

Research priority #4, which served as the guiding priority for this study is based upon a sound literature base that demonstrates its value in the teaching and learning process. It is critical for educators to determine the best methods to teach and distribute agricultural information to students necessary for retention and application (Frick, Birkenholz, & Machtmes, 1995; Pense & Leising, 2004). Bain (2004) stated "best teaching cannot be found in particular practices . . . but

in the attitudes of the teachers, in their faith in their student's abilities to achieve, in their willingness to take their students seriously and let them assume control of their own education, and in their commitment to let all policies and practices flow from central learning objectives" (p.78-79). The needs and interests of students have changed and it is essential to maintain an understanding of these changes and ensure that curriculum is tailored to address all learner needs (National Research Council, 2009).

Doyle (2011) described the teacher's role in the teaching and learning process as an architect of learning, rather than the spokesperson of knowledge. Engaged learners must be immersed in the learning process, which is guided by the teacher. This process of evaluating current education systems and curriculum is essential in the development of meaningful learning environments for all students. The agricultural education curriculum must be evaluated to ensure that the needs of the modern students are being met within an educational environment that will lead to the growth and development of both the student and the entire food, agriculture, and natural resource system (Roberts, Harder, & Brashears, 2016).

Secondary Agricultural Education Enrollment

The research base surrounding student enrollment in agricultural education is primarily focused upon ways to increase enrollment in post-secondary agriculture programs (Fanno & Cole, 1999). There is a lack of research on methods that can be used to sustain and increase enrollment in secondary agricultural education programs (Myers, Dyer, & Breja, 2003). Most of the existing research/literature has focused on enrollment patterns and barriers to enrollment (Breja, Ball, & Dyer, 2000; Conroy, 2000; Croom & Flowers, 2001; Gliem & Gliem, 2000). There is little current research regarding factors that influence student enrollment in secondary

agricultural education programs and there is a specific lack of research regarding the relationship that middle school agricultural education programs have on that situation.

The only existing literature regarding factors/experiences affecting enrollment focuses on enrollment patterns/barriers and does not include middle school agricultural education as a major contributing factor. A variety of different factors have been found to contribute to a student's enrollment decision within this area. Marshall, Herring, and Briers (1992) found that course characteristics, personal identity, agricultural interest, application of knowledge, and the role of significant others all affected student enrollment. The role of significant others in enrollment decisions can be very influential and incorporate many individuals including parents, school counselors, family, and teachers. Among these individuals, it has been determined that parents, agriculture teachers, friends, and former agricultural education students have the greatest impact upon student enrollment decisions (Reis & Kahler, 1997). Research has also indicated that minority students are less likely to enroll because of negative perceptions surrounding agricultural education and agriculture in general (Jones & Bowen, 1998). Sutphin and Newsom-Stewart (1995) found that males were more likely to enroll in an agricultural education course due to peer pressure than were female students and females were more likely to enroll to develop life/team building skills.

New requirements for graduation and college admission have caused a rise in the number of students who are utilizing elective credits to take additional academic or advanced placement courses (Phipps et al., 2008). Additionally, this has caused agricultural education courses to be viewed more as an option for those students who are not academically inclined or plan to pursue post-secondary educational opportunities (Hoover & Scanlon, 1991). Riesenberg and Lierman (1990) found that the four factors that had the greatest impact on student enrollment in

agricultural education programs were scheduling conflicts, student attitudes regarding agriculture, new elective course offerings, and academic vs. technical debate.

Student attitudes and perceptions toward agriculture play a key role in secondary agricultural education enrollment. Hoover and Scanlon (1991) found that elevated high school requirements, negative image of agriculture, perceived course value, and the influence of significant others all affect a student's decision to enroll in an agriculture course. Five conceptual domains that impact agricultural education enrollment include career preparation, academic rigor/enhancement, societal pressure, skill development, and activity centered learning (Sutphin & Newsom-Stewart, 1995). Each of these factors ultimately affect a student's perception of agriculture and agricultural education. This perception will then have a significant impact on a secondary enrollment decision. The perceived value and overall image of agriculture and agricultural education is important and necessary to increase the probability of enrollment (Hoover & Scanlon, 1991).

Agricultural education has struggled with program perception issues for many years. This issue is based upon the misconception that agricultural education programs are designed to prepare students specifically for careers in production agriculture. The notion that agricultural careers are for individuals with limited academic abilities has further increased the misconceptions surrounding agricultural education (Warmbrod, 1968). Parents play a crucial role in this process and the idea that agriculture is for students with limited abilities or for someone else's child can have major impacts on enrollment. Kotrlik (1987) found that parents were the primary influence upon a student's decision on whether or not to enroll in a secondary agricultural education course. Herr (1987) determined that students seek the advice of parents, teachers, friends, and counselors before deciding to enroll in an agriculture course. It is important

to understand what influences a student to enroll in an agricultural education course. Misconceptions regarding the purpose of agricultural education must be reduced in order to ensure that students are not being deterred from enrolling.

Motivation and socio-cultural factors also contribute to secondary enrollment decisions. Reis and Kahler (1997) determined that students were motivated to enroll in agricultural education courses due to interest in agriculture, living on a production farm, or being interested in the experiences offered through agricultural education involvement. Other factors, including socio-cultural factors, have shown a strong correlation with agricultural education enrollment decisions (Sutphin & Newsom-Stewart, 1995). Studies have indicated that minority students, including African American and Hispanic Students, maintained a similar perception of agriculture and agricultural education. These students tend to maintain a negative perception of the agriculture industry, which ultimately affects their decision to enroll in an agricultural education course (Talbert & Larke, 1995). Many minority students associate agricultural education with production agriculture and maintain the belief that there are few career opportunities available in the agriculture industry (Jones & Bowen, 1998).

There is a lack of existing research regarding the factors that affect secondary enrollment in agricultural education. This lack of research/literature is further exacerbated when looking at the relationship that middle school agricultural education has on this phenomenon. This issue is too critical to ignore and research needs to be conducted to address this issue. Middle school agricultural education programs play an important role in the recruitment and retention of students as they transition into the secondary program. It is essential to ensure that the middle school agricultural education curriculum is designed for the modern student and understand how this relates to secondary enrollment. This study described the relationship that experiences in the

middle school agricultural education curriculum had on secondary agricultural education enrollment in an effort to close this research gap.

Agricultural Education

Agricultural education has experienced many changes during its history as a subject within public school education, however the fundamental philosophy has remained consistent (Phipps et al., 2008).

> Agricultural education may be defined as systematic instruction in agriculture and natural resources at the elementary, middle school, secondary, postsecondary, or adult levels for the purpose of (1) preparing people for entry or advancement in agricultural occupations and professions, (2) job creation and entrepreneurship, and (3) agricultural literacy. (Phipps et al., 2008, p. 3)

School-based agricultural education (SBAE) programs provide students with career and technical education as well as agricultural literacy objectives. Agricultural education programs provide students with an educational experience that reflects the dynamic and evolving agricultural industry (Phipps et al., 2008).

Agricultural education has been a fundamental component of formal education since the late 1800s. During this time period, agricultural education was primarily provided in elementary schools. This instruction was very basic and incorporated topics focusing on school gardens and the study of nature and the environment. However, a shift toward becoming more knowledgeable regarding agricultural practices began to take place in the early twentieth century and a heavier emphasis was placed on agricultural education for the general public (Bricker, 1914).

Agricultural education has consistently incorporated a systematic problem-based approach to prepare students for a complex and ever changing industry. Therefore, the

curriculum in agricultural education is flexible and changing to meet the needs of the modern learner and the current problems facing the industry. Agricultural education provides students with the opportunity for practical application of knowledge within real-world situations, which assists in the successful transfer and retention of information and skills. The emphasis on learning by doing is an essential part of preparing students for success within the industry. Educational experiences are often in the form of problems and questions that are being faced by individuals currently working within the industry. This educational method assists in keeping the curriculum relevant and practical, while also providing the opportunity for core subject integration (Phipps et al., 2008).

Agricultural education programs also provide students with career guidance and exploration. Students learn to navigate the broad industry of agriculture and determine the role that it plays within their life and potentially discover a future career interest. Throughout this experiential education process, students develop as leaders and responsible citizens. Agricultural education develops each student and helps them to acquire interpersonal, subject area, and problem-solving knowledge and skills. This learning process takes students from a basic awareness of agriculture to an in-depth understand and development of skills and proficiency within the field. Students learn to utilize research and inquiry to develop potential solutions to problems. Teaching and learning in agricultural education is an experiential pursuit that prepares students to be problem solvers within the industry (Phipps, et al., 2008).

Experiential learning has been a cornerstone for agricultural education since its inception in the public school system. Referred to at this time as vocational education, agricultural education incorporated classroom instruction, hands-on experiential learning, work related experience, and application through youth organizations (Friedel, 2011). These educational

programs were instituted upon what now serves as a component of the FFA motto: “Learning to do and doing to learn” (National FFA, 2016a). These early forms of agricultural education were laying the foundation for the substantial growth and spread of agricultural education throughout the United States. However, this growth did not come without the criticism of those who were opposed to early education practices in agriculture. Many argued that the current level of agricultural education was too basic and did not provide students with a fundamental understanding of the industry necessary for future growth and development (Davenport, 1908).

The arguments in favor of a more fundamental and scientific-based approach to agricultural education spurred the growth of agricultural education programs in secondary schools across the United States. Society, as a whole, began to see the need for an agriculturally literate population and supported the growth of the new programs. During the early 1900s, agricultural education began to grow at a rapid rate with specific focus upon secondary programs (Hillison, 1986). In 1906, school-based agricultural education was being offered in less than one hundred secondary schools across the United States (Robinson & Jenks, 1913). However, by 1915 agricultural education was being offered in 3,675 secondary schools, which served over 73,000 students across the country (True, 1929). The growth of agricultural education continued to rise quickly and by the end of the 1914-1915 school year agricultural education programs were being offered in 4,390 secondary schools, which provided quality instruction to 85,573 students across the United States (Camp, 1987). Federal legislation played a critical role in the growth and development of agricultural education during this time period. Legislative and federal support began to grow and ultimately led to the passage of a series of Acts, which publicly demonstrated this support.

Federal support for agricultural education was publicly demonstrated by the passage of the Smith-Hughes Act in 1917. This act established federal funding and support for SBAE, which provided the resources necessary to grow and develop agricultural education programs across the country. Much of the success and growth that agricultural education has experienced over the past one hundred years can be attributed to this single piece of legislation (Camp, 1987). There were many individuals who contributed to the development and passage of the Smith-Hughes Act, but among the most influential included Carroll Page, Dudley Hughes, Hoke Smith, and Charles Prosser. These four men had a vision for agricultural education and worked together to ensure SBAE would be made available across the United States. It is important to understand that all four men played a significant role in the development of this critical piece of legislation. Often times Hoke Smith and Dudley Hughes receive the primary recognition for the Act as it was named after them. However, it should be noted that Hoke Smith and Dudley Hughes actually had more of a background role in the passage of the act, whereas Page and Prosser were more influential (Camp, 1987). Nevertheless, these four men had an understanding of how agricultural education could make a difference in the lives of students and they demonstrated this belief by working tirelessly to provide federal support for agricultural programs. Without the Smith-Hughes Act, it is likely that agricultural education would not be where it is today.

The passage of the Smith-Hughes Act signified support for agricultural education, which fostered the growth and development of agricultural education programs by providing federal funding to create new programs. This was particularly critical in states where there was a lack of support or money necessary to back these programs. These states were then able to utilize the money provided by the Smith-Hughes Act to create agricultural education programs. The federal recognition of the need for agricultural education also led to individual state acceptance. (Phipps

et al., 2008). The act also provided guidelines that must be followed in order to receive the federal support. These guidelines ensured a level of consistency among states and sought to provide students with specific educational opportunities. The act outlined three specific guidelines that must be adhered to in order to receive the federal support:

1. Students were to be properly and adequately prepared for needed employment.
2. Students were required to be in secondary school and not already enrolled in college courses.
3. Programs were to be designed for students who were over fourteen years old and who were currently working or planning to work on or in a particular farming enterprise (Phipps et al., 2008).

The Smith-Hughes Act outlined specific components that were to be enacted in order to comply with federal regulations and to continue receiving federal funds in the future. Each component of the act was designed to foster successful implementation of agricultural education programs and to ensure that funds were being utilized appropriately. The act required the development of a Federal Board for Vocational Education, which would supervise program administration and approve state fund allotments/expenditures (Phipps et al., 2008). The Smith-Hughes Act also divided the country into four regions and selected an individual within each region to serve as the supervisor. Each supervisor, known as regional agents, would work closely with each state to ensure overall program growth/development, disseminate information, and evaluate/audit state programs. Each agent played an instrumental role in the design of effective vocational education programs (Phipps et al., 2008).

The Smith-Hughes Act also required each state to create a state board in order to receive their federal funding allotments. The board was to be comprised of a group of key individuals

who would work together to supervise and support the growth and development of vocational education within their state. These individuals were responsible for developing and submitting plans for their state regarding vocational education to the federal board. These plans were to serve as a guide for the state as they further developed vocational education throughout their individual state. The plans were to be very detailed and thorough, including areas such vocational education plans, equipment inventories, teacher needs/assessments, individual qualifications, and unique training plans. The plans were then submitted for approval and indicated the states support of vocational education and how federal funds were to be utilized (Phipps et al., 2008). This team of individuals, from the federal to the state level, worked closely to ensure funds were spent appropriately, but also that high quality educational programs were being offered to students across the United States. This began the early formation of individuals working together to promote the advancement of agricultural education programs. These individuals, along with the requirements and plans set forth by the Smith-Hughes Act, indicated a new level of support for vocational education and laid the framework for growth and development into the future.

The Smith-Hughes Act was only the beginning for the development of vocational education and agricultural education. This act spurred the development of many other programs and initiatives geared toward the advancement of vocational education. It led to an increase in federal spending/support for vocational education, the development of a youth leadership organization for agricultural education students, and fostered a community of individuals in support of vocational and agricultural education. By 1919, every state had accepted the requirements of the act and supported vocational education with state legislation (Malpiedi, 1987). Federal spending for vocational education was rising considerably and had increased

almost 2.5 million dollars within the first ten years after the passage of the Smith-Hughes Act. Each individual state also matched the federal funding in support of agricultural educator salaries and the development of a state supervisory board (Malpiedi, 1987). It is important to realize the impact that the Smith-Hughes Act had upon the continued development and support of vocational education and agricultural education. It provided the necessary resources and funding that is required to establish a quality educational experience for students. The effects of this act can still be seen in agricultural education programs today and much can be contributed to the formulation and passage of this key piece of legislation.

The act also led to the establishment of many new teacher-training opportunities for individuals interested in becoming agricultural educators. These schools began to grow rapidly from forty schools in 1918 up to sixty-one schools by the end of 1921. This growth also spurred the creation of the first youth leadership organization in 1926. This group was called the Future Farmers of Virginia and provided students with the opportunity to take what they were learning in the classroom and apply it in a real situation. Students also learned leadership skills that would apply to all work settings. This small club of farm boys would lay the foundation for a nation-wide you leadership organization within agricultural education and change the landscape of youth development within agriculture from that point forward (Malpiedi, 1987).

The development and spread of the Future Farmers of America (FFA), which was founded in 1928, was a direct result of the work and inspiration of the Future Farmers of Virginia. The new national organization provided unique experiential learning opportunities for all students enrolled in agricultural education courses. During the initial decade of vocational education, substantial growth and support had been successfully established. The country began to see the need for vocational and agricultural education and federal support and finances were

provided to establish programs across the United States. Youth leadership organizations were developed and a new generation of students were born and they had a passion for learning about agriculture and applying their knowledge and skills to local farms and the workforce (Malpiedi, 1987).

Agricultural education and the need for a more informed population regarding agricultural practices and consumer choices continued to grow and spread across the country. There was an increased demand for teaching individuals about better farming practices during the dust bowl. This led to the passage of the Bankhead-Jones Act of 1935, which more than doubled the funding that was provided to land-grant universities to address this problem. These funds were utilized for research, teaching, and disseminating information for better farming practices, which eventually made its way into the nation's secondary agricultural education courses. This demonstrated the first cycle of agricultural research being disseminated into secondary schools in an effort to develop a more informed population in regards to agriculture and agricultural practices (Mercier, 2015).

Throughout the past several decades, federal legislation has continued to support agricultural education in a variety of different ways. The Carl D. Perkins Vocational and Technical Education Act of 1984, which was later changed to the Carl D. Perkins Career and Technical Education Act in 2006, provided continued federal support and provided specific guidelines for states to follow in order to receive the funds. These funds also have a specific portion that must be matched and provided to each state. During the 2015 fiscal year, the Perkins Act required the U.S. Department of Education provided $1.12 billion in support of Career and Technical Education programs across the United States. Each state received a specific portion of these funds according to state population and per capita income. States are provided with some

freedom to utilize these funds as they see fit and can be distributed to local school systems for further use. These funds can then be utilized to purchase specific equipment for students, curriculum resources, professional development opportunities, etc. (Mercier, 2015). It is important to understand the importance that the Carl D. Perkins Career and Technical Education Act had upon the continued growth and success of agricultural education since 1984. This piece of legislation continues to financially support agricultural education programs across the United States and indicates federal support for educational opportunities/experiences in agriculture.

Agricultural education has grown substantially over the years and the National Association of Agricultural Educators (NAAE) estimates that around one million students are currently enrolled in agricultural education courses/programs across the United States. Twelve thousand agricultural educators teach these courses and even more teachers are beginning to incorporate agriculture into their lessons outside formal agricultural education courses. In the past, most agricultural education programs were offered in rural settings. However, recent initiatives and support have helped to provide students with these educational opportunities in urban settings as well (Mercier, 2015).

Agricultural education courses are designed based upon a three-ring model that includes classroom/laboratory instruction, FFA, and supervised agricultural experiences (Dailey, Conroy, & Shelley-Tolbert, 2001). Each component of the agricultural education program works together to provide students with a high quality educational experience (Phipps et al., 2008). Students receive classroom/laboratory experiences during the day-to-day instruction that occurs in their agriculture course. The knowledge and skills that are learned in the classroom can then be put to the test in event/competitions offered in the FFA. FFA experiences also help students develop leadership skills and learn from other students who share the same interests in agriculture.

Agricultural education students also design a supervised agricultural experience program during each course. This program is intended to provide students with real-world application of the knowledge and skills that they have acquired (Phipps et al., 2008).

The experiences that students have in agricultural education come from each of these three components. The three components of agricultural education served as the variables for the study. Students will have various perceptions of the experiences they have during their unique involvement in agricultural education courses/programs. Each of these experiences will come from the three components of agricultural education, thus providing the study with the identified variables of interest. The three components of agricultural education collectively affect a student's perception of agricultural education and could possibly have subsequent affects on future enrollment decisions or continued interest in agriculture. Student needs and interests in agricultural education have changed over the years and it is important to listen to the student and ensure that educational programs are tailored to meet the changing needs of a new generation of learners.

Modern agricultural education courses provide quality instruction to students of all ages including elementary, middle, secondary, post-secondary, and adult learning opportunities and outreach courses. The primary purpose of the courses and programs in agriculture is to create more informed consumers and develop a generation that is able to support agriculture and meet the challenges of the future (Phipps et al., 2008). Agriculture is essential to life and an informed population is essential for the future growth and success of society. "Agricultural education prepares students for successful careers and a lifetime of informed choices in the global agriculture, food, fiber and natural resources systems" (National FFA, 2016c).

FFA

The National FFA Organization, formerly known as Future Farmers of America, was founded in 1928 and provides students with a unique youth leadership opportunity. The primary purpose of this organization is to allow students to apply what they have learned in the classroom in a real setting, while also developing leadership skills. It is intended for all students enrolled in agricultural education to have some level of involvement in the FFA, which is why it maintains its position among the three components of agricultural education (Phipps et al., 2008).

The National FFA Organization was founded by a group of thirty-three high school students who were attending the American Royal Livestock Show in Kansas City, MO. The organization has grown and changed drastically over the years including a merger with New Farmers of America in 1965 and opening membership to females in 1969. Along with these changes, the mission of the FFA has also shifted to meet the needs of a changing society. The early focus of the organization was to provide farm boys with the opportunity for self-expression and leadership development. This focus was intended to provide these farm boys with confidence and pride in their farm heritage. However, this mission has changed over the years alongside a changing society.

Today, the FFA encourages members to develop unique talents and explore their own interests and careers within the field of agriculture. This changing mission and a shift in the American population also led to the organizational name change in 1988 from the Future Farmers of American to the National FFA Organization (Mercier, 2015). The name changed to reflect the new American student population and the fact that most new members were not intending to become future farmers. Thanks to the many agricultural advancements that occurred during this time period, most individuals did not have to enter the field of agriculture unless that

was their passion and career goal. Students were beginning to focus on new career areas in agriculture including agricultural science, technology, and leadership.

The FFA continued to grow throughout its history and received a Congressional charter in 1950, which was also referred to as Public Law 81-740. This charter helped to strengthen the connection between the FFA and agricultural education courses in secondary schools throughout the United States. This was a critical piece of legislation because it allowed FFA to be considered an intra-curricular program instead of extra-curricular like most other school clubs and sports. This officially made FFA a part of agricultural education and an essential experience for all students enrolled in these courses. Today the National FFA Organization has approximately 650,000 members registered in 7,665 chapters (Mercier, 2015). The overall growth and development of the National FFA Organization is outstanding and it has been continuing to grow despite major shifts and changes within the agriculture industry.

The National FFA Organization strives to instill leadership and provide personal development opportunities for all members across the country. Leadership is very important in today's global marketplace and will be essential for the future of all members. Leadership is "the process of persuasion or example by which an individual induces a group to pursue objectives held by the leader or shared by the leader and his or her followers" (Gardner, 1990, p. 141). Maxwell (1993) provided a much more simplistic definition of leadership and referred to it as influence. Leaders make a difference in their communities, families, and employment (Kouzes & Posner, 2002). The FFA provides educational experiences for students to help them to learn leadership skills, which will assist in these areas. It is important to understand that leadership can be taught and learned systematically (Kouzes & Posner, 2002). Some individuals argue that leaders are born, however research indicates that it is more about practice and self-reflection than

genetics (Bennis, 1989). This has led to the development of a curriculum geared toward providing quality leadership experiences for students. The National FFA Organization strives to ensure that all students have these opportunities so that they can learn the skills necessary to become an effective leader.

The FFA is a unique educational opportunity for students that extends education far beyond the walls of the classroom. Students are provided with experiential learning opportunities that provide experiences in leadership, group dynamic, influence, and goal setting/attainment. The development of these skills assists students in becoming community leaders throughout the country. Communities of informed consumers and leaders in agriculture assist in the spread of agricultural literacy and accomplishing the overall goals and initiatives of agricultural education. Student development is a key component of the mission of the National FFA Organization and provides students with many critical leadership skills including interpersonal skills, confidence, character development, decision-making, healthy choices, and much more. These key leadership skills not only provide quality educational experiences for students enrolled in agricultural education, but they also prepare students for a successful future in a global marketplace (Phipps et al., 2008). FFA is the most effective component of the total agricultural education program in regards to preparing students for a successful future and career (Staller, 2001). This is due to the fact that the FFA seeks to equip students with the leadership skills necessary for future success and provides them with the experiences necessary to fully develop these skills.

Successful FFA chapters provide many unique educational experiences for students enrolled in agricultural education. These program must be strong in a variety of areas including FFA knowledge, membership diversity, shared member responsibility, capable officers,

challenging program of activities, workable constitution and bylaws, proper equipment, regular chapter meetings, adequate financing, and school/community support. An active chapter will seek to improve these areas, which are necessary for growth and development. Successful chapters require participation from active members who are involved in all areas. Chapter members should be provided with opportunities to participate in activities and offer new ideas. This will help to establish enthusiasm among members, which will ultimately lead to successful programs and a healthy chapter. A combination of challenge, work, fun and rewards helps to foster increased member involvement along with overall growth and development (Phipps et al., 2008).

FFA members are provided with many different educational outlets to develop and sharpen key leadership and career skills. One of the educational opportunities that allows students to apply what they have learned in the classroom in a real-world experience is called a career development event (CDE). These are typically competitive events where student will put their knowledge and skills to the test as they compete against FFA members from other schools in the same content area. CDEs provide students with excellent experiential learning opportunities that are necessary for leadership development and future career success. These events support the learning that is taking place in the agricultural courses, while also demonstrating the importance and relevance of academic integration in agriculture. Each event has some level of academic integration, which allows students to make critical connections between academic learning and real-world application (National FFA, 2016b).

These events also provide a unique opportunity to work closely with academic content areas and teachers to show students the relevance of what they are learning in a cross-curricular format. This is important for students and it also provides more rigor and relevance to the

agricultural course. These events test the knowledge and skills of students, both individual and on teams, in twenty-four agricultural career areas that includes everything from public speaking to welding. While each event may be different in content area, all students will be provided with experiential learning opportunities in the development of critical thinking skills and communication ability, which will prove valuable to their future as they enter a competitive and ever changing workforce (National FFA, 2016c).

The National FFA Organization also prepares youth to become advocates and leaders in agriculture by providing an opportunity to serve the organization as an officer. FFA officers, at all levels, are essential to the function and leadership of the organization. Members have the opportunity to seek an officer position in the organization at all levels from the local to national level. This position provides students with the opportunity to develop key leadership skills and learn how to effectively work with a team. There are six constitutional officers in the FFA, but states and local chapters have the ability to add additional positions as necessary to accomplish local needs. Officers in the FFA learn to lead by example and encourage fellow members to be involved in programs/meetings, travel opportunities, and competitions. Officers should have the intrinsic motivation to be a leader, be responsible, and be willing to work with others to accomplish shared goals (National FFA, 2016d). Officer positions are another way that the FFA provides educational experiences for students that will help them to be successful in the future. It also provides further hands-on learning opportunities for those students who are interested in agricultural leadership.

The National FFA Organization prepares students for successful futures in leadership and public service. A significant number of past FFA members have gone on to be influential leaders from the local to the national level. These individuals utilized the knowledge and leadership

skills that they learned in the FFA to make a positive impact on society. Former members of the FFA that have gone on to make significant leadership contributions include former President Jimmy Carter, senators, representatives, governors, astronauts, and educational leaders (Brannon, Holley, & Key, 1989). The FFA provides students with many leadership skills that will aid in future success including public speaking skills, effective decision-making, interpersonal relationships, resource management, and teamwork (Rutherford, Townsend, Briers, Cummins, & Conrad, 2002). These skills will be valuable for students throughout their careers and help them to become leaders in agriculture or any sector of their choosing.

Travel opportunities and leadership conferences through the FFA are a critical component of youth leadership development. Leadership events can either be date specific events such as conventions or conferences that occur annually and throughout the year. Conferences and conventions are typically held on the state and national level, which provides students with the opportunity to travel and meet new people. There are even leadership opportunities for students to travel to other countries. These experiences are a fundamental component of the National FFA Organization and provide students with excellent leadership development opportunities (Phipps et al., 2008).

FFA membership occurs at a unique stage of life for student learners. It is important to understand students and their unique developmental stage in order to effectively recruit and involve students in the FFA. Students join FFA during one of the most challenging stages of life where their need for sense of belonging, intimacy, and love are enhanced (Croom & Flowers, 2001). A sense of belonging becomes critically important as a student progress through the stages of life (Maslow, 1943). The FFA provides an opportunity for students to secure a position within a group and satisfy many emotional and developmental needs. By understanding the

developmental needs of students, teachers and individuals within the field of agricultural education can better provide experiences for students that are specifically tailored to their unique needs.

The National FFA Organization provides students with many experiences and skills that will prove valuable to their future. The experiences that a student has in the FFA will ultimately affect their perception of agricultural education and their decision to continue enrollment. FFA experiences in middle school agricultural education served as a variable within this study because it plays a critical role in a student's overall experience in middle school agricultural education. This study described the teacher's perception of the experiences in the middle school agricultural education curriculum and the relationship to secondary enrollment. FFA experiences are part of middle school agricultural education and were described in relation to secondary enrollment. There is currently a lack of research regarding middle school agricultural education experiences in the FFA and how they relate to secondary enrollment. This study also sought to fill the research gap and make efforts to answer the research question/objectives.

Supervised Agricultural Experience

Supervised agricultural experience (SAE) programs are a fundamental component of agricultural education courses across the country. SAE is defined as "the application of the concepts and principles learned in the agricultural education classroom in planned, real-life settings under the supervision of the agriculture teacher" (Talbert, Vaughn, Croom, & Lee, 2007, p. 418). An SAE provides further educational value by connecting theory to application. SAEs provide students with hands-on learning opportunities that focus upon their individual interests in agriculture. This educational experience allows students to apply what they have learned in the

classroom to a real situation. This process helps to reinforce what is taught in the classroom, while also teaching skills that can only be learned in an experiential setting (Phipps et al., 2008).

"SAE programs consist of planned, sequential agricultural activities of educational value conducted by students outside of class and laboratory instruction" (Phipps et al., 2008, p. 438). SAE programs should be both cumulative and relevant to the specific educational goals of the student. It is intended for all students to have an approved SAE and that is why it has maintained its position as one of the three components of the agricultural education program (Phipps et al., 2008).

The origin of the SAE can be linked to Stimson's home project method, which was implemented in the early 1900s prior to the passage of the Smith-Hughes Act (Hillison, 1986). Stimson maintained a belief that students could not simply learn by sitting in an agricultural classroom. This belief was further justified by the fact that most programs did not have adequate supplies and resources for everyone in the class to be involved at all times. He felt that students should have experiential learning opportunities so that they could link coursework to economic and global relevance (Stimson, 1919).

Stimson proposed that students would utilize home farms and equipment in order to carry out specific tasks and educational initiatives/goals. Throughout the project, students were expected to keep accurate records regarding invested time and money, as well as any returns on investment. The overall goal was for students to build upon the previous years work and experience. Therefore, the projects would become more involved and increase in scope throughout their secondary education. Stimson also intended for the project to be a family endeavor that would ultimately disseminate new agricultural methods and knowledge to families throughout the community. The agriculture educator also had a key role in the development and

execution of a quality home project. Teachers were to make regular home visits to monitor student progress and also to offer support and guidance. This process provided students with a unique opportunity to apply what they were learning in class to their own farms at home (Stimson, 1919). While the home project method has changed over the years, the fundamental components and rationale for the project remains the same. Stimson had a vision for the home project method and it has remained a critical component of agricultural education throughout history.

The famous philosopher John Dewey developed the idea that education should be based upon personal experiences specific to the individual learner. Therefore, Dewey challenged educators to work toward providing unique educational experiences for students that were tailored to meet their individual learning needs (Dewey, 1938). Agricultural education responded to this new philosophy by implementing supervised agricultural experience programs across all programs (Phipps et al., 2008). SAE programs have changed over the years but the fundamental nature of the experience remains the same.

The Vocational Education Act of 1963 was designed to encourage off-farm SAE programs and foster new innovative types of SAE programs. However, the wording of the Act seemed to de-emphasize the need for SAE inclusion in agricultural education programs (Boone, Doerfert, & Elliot, 1987). This caused a decline in the participation of SAE programs, which has continued to drop (Moore, 1979). For this reason, along with others, SAE quality and overall participation have dramatically changed since its first inclusion (National Research Council, 1988). However, SAE still maintains an equal portion of the agricultural education three-ring program model and is an effective educational experience for students enrolled in agricultural

education courses. All students are expected to have some level of involvement in an approved SAE program during their enrollment in agricultural education (Phipps et al., 2008).

SAE programs provide students with an experiential learning approach within the field of agriculture. The educational experience that students have in their SAE programs can be linked to Kolb's experiential learning model as well as the educational philosophy of John Dewey (Phipps et al., 2008). Kolb believed that educational experiences should provide opportunities for students to develop their own knowledge and understandings. This led to the development of Kolb's experiential learning model which identifies a cyclical learning process where learners move from concrete experience to reflective observation, abstract conceptualization, active experimentation, and then back to some new unique concrete experience that begins the process over again (Kolb, 1984). Kolb's experiential learning model shares many similarities to Dewey's educational philosophy specifically in the areas of reflective learning methods, problem solving skills, and the utilization of the scientific method (Dewey, 1938). SAE programs continue to incorporate many of the aspects of these two educational philosophers. Experiential learning is the foundation of every SAE program and will continue to be a cornerstone for the educational experiences that each student will have in their program.

SAE involvement assists students in a variety of different academic and economic areas beyond their immediate direct benefit from the experience. Studies have shown a positive relationship between SAE involvement and overall student achievement in other areas (Cheek, Arrington, Carter, & Randell, 1994; Noxel & Cheek, 1988). Specifically, SAE involvement has shown to increase student achievement in the area of science (Ramsey & Edwards, 2004). SAE programs also have a positive influence on agricultural education enrollment and FFA membership (Retallick & Martin, 2008). Several studies indicate that SAEs have a positive

impact on the local economy and provide a positive return on investment (Retallick & Martin, 2005; West & Iverson, 1999). SAE programs are critical experiential learning opportunities for students enrolled in agricultural education courses that provide benefits far beyond the experience itself.

The SAE program has evolved over the years and now incorporates programs in four unique areas including ownership/entrepreneurship, placement, exploratory, and research (Figure 1). Students determine what area they want to focus on based upon their own individual interests and learning needs.

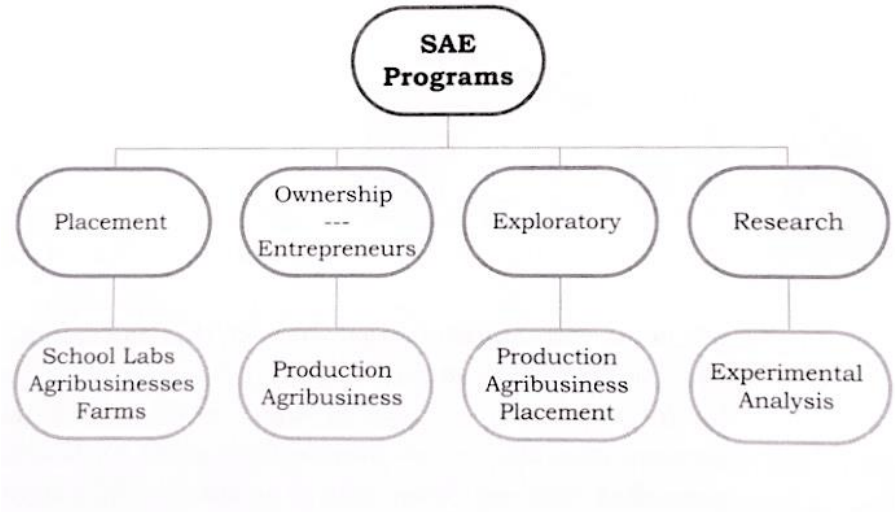

Figure 1. Types of SAE Programs and Settings Where Students May Gain Supervised Experience (Phipps et al., 2008).

SAE programs are a critical component of any effective agricultural education program and provide a necessary link between classroom experiences/theories and application (Figure 2). SAE programs allow student to apply what they have learned in the classroom and make critical links between academics and real-world application. This connection is essential in establishing rigor and relevance within the agricultural education program. This also assists in the true

understanding of classroom concepts, which will remain with the student far beyond their secondary education (Phipps et al., 2008).

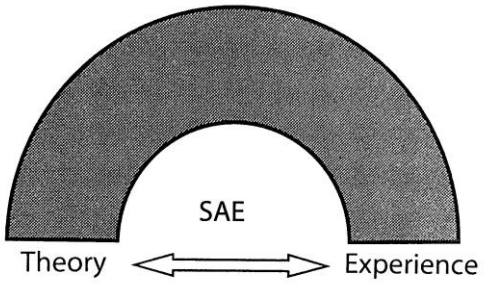

Figure 2. SAE Programs Blend Theory and Experience (Phipps et al., 2008).

Student involvement with their SAE provides many benefits that will foster future success including:

> development of decision–making skills, including career and personal choices, improved self–confidence and human relation skills, application of knowledge learned in the classroom, knowledge of a variety of occupations and careers, development of time management and record–keeping skills, document of experience needed on job applications, discovery of areas of personal interest, practice of responsibility and development of independence, and development of pride through personal accomplishment. (Talbert, et al., 2007, p. 420– 421)

Research indicates a weakness surrounding student participation in SAE projects or programs (Dyer & Osborne, 1995). Studies also indicated that many students participate in a wide variety of SAE projects, but the majority fail to combine them to form a specific SAE program (Phipps et al. 2008). Several factors have been identified as potential causes of lack of SAE participation including lack of teacher time, lack of facilities, decrease in student desire/participation, student dislike for maintaining records, student participation in other

activities, and economic factors (Foster, 1986). Another issue with student participation in SAE is the connection to their future plans and their rationale for being in an agriculture class. Many students enroll in agricultural courses to learn about agriculture and have no specific plans to pursue careers related to entrepreneurial or placement SAE programs. This often means that students lack the connections and resources to easily develop and carry out a successful SAE program without extensive teacher support and time investment (Phipps et al., 2008). While most agricultural teachers support the effective implementation of SAE programs, may have significant difficulty with student participation and successful programs (Osborne, 1988).

Teachers must implement strategies for the development of quality SAE programs. This requires the understanding of the changing nature of agriculture and being open to new models of SAE programs. With the majority of today's students lacking a production agriculture background, there is a greater need for nonproduction-oriented SAE programs. This situation is further complicated by the fact that these newer types of SAE programs are generally harder to plan and facilitate than traditional production programs. Teachers must plan carefully to ensure high-quality SAE programs among all students regardless of the selected type. Five characteristics have been identified in the development of high-quality SAE programs including (1) connecting classroom instruction to real application, (2) program experiences must be programmatic, (3) program must motivate students to learn, (4) program supervision is required, and (5) programs must be evaluated. These characteristics are essential in student motivation and enthusiasm regarding SAE programs. This enthusiasm is critical in the successful implementation and acceptance of SAE programs within the agricultural education curriculum. Students must view SAE programs as a fun and interesting educational opportunity, instead of an academic punishment or negative aspect of being in an agriculture class (Phipps et al., 2008).

Student motivation has been identified as the most critical component in the development of successful SAE programs. Students have indicated that SAE programs tend to feel more like homework than a voluntary educational experience. However, research has demonstrated that student interest drastically improves when teachers instruct students on the potential and value of a successful SAE program at the beginning of the process (Phipps et al., 2008). The number of classroom hours spent on SAE instruction and the utilization of SAE examples in class has a positive relationship with SAE program quality among students (Case & Stewart, 1985; Gibson, 1988). Teachers should begin instruction on SAE programs early in the semester and provide students with systematic instruction on SAE programs so that students understand the true educational value. Teachers can also use a variety of other strategies to increase student motivation including student involvement in planning SAE programs, positive reinforcement, recognition of SAE accomplishments, and taking a personal interest in student SAE programs.

Agricultural education teachers play a critical role in the development of successful SAE programs (Dyer & Osborne, 1995). Teachers must be willing to put in the time to plan, supervise, and evaluate student SAE programs. Teachers have reported SAE programs as one of the most difficult areas of agricultural education to successfully teach and implement. Teachers further identified record keeping and finding time to adequately supervise SAE programs as barriers (Miller & Shield, 1984). It is important for teachers to incorporate all stakeholders of the SAE program in order for it to be successful including local school administration, parents/guardians, students, and other involved stakeholders as it pertains to the type of SAE.

It is important for school administrators to understand the role and value of SAE programs in agricultural education. Teachers should present the experiential learning value of these programs and the fact that effective implementation of programs will occur outside of the

classroom and the normal school day. Teachers should also work closely with parents of students to help them understand the full benefit of SAE programs and the connection to the agricultural education curriculum. Parents have often viewed SAE programs as an intrusion on both family time and privacy due to the nature of the educational experience, time, and supervision required. However, proper education for students and parents will ultimately lead to enthusiasm and support for the program. Teachers must also work closely and build lasting relationships with employers and stakeholders outside of the school environment that will be working with students. These individuals need to understand the rationale behind SAE programs and ensure that students are being provided with the best possible learning experience. By working with each group of stakeholders, teachers can further assist in the successful implementation of SAE programs that will provide the best experiential learning experience for students (Phipps et al., 2008).

Supervised agricultural experience programs provide students with many experiences that enhance their classroom learning, as well as providing them with skills that will benefit them far beyond their secondary education. The experiences that students have with their SAE program will have an impact upon their perception of agricultural education their subsequent decision to continue enrollment. SAE programs in middle school agricultural education served as a variable within this study because it plays a crucial role in a student's overall experience in middle school agricultural education. This study described the teacher's perception of the experiences in the middle school agricultural education curriculum and the relationship to secondary enrollment. SAE experiences are part of middle school agricultural education and were described in relation to secondary enrollment. There is currently a lack of research regarding middle school

agricultural education SAE experiences and how they relate to secondary enrollment. This study also sought to fill the research gap and make efforts to answer the research question/objectives.

Classroom/Laboratory Instruction

Classroom and laboratory experiences in agricultural education provide students with a fundamental understanding of the agriculture industry, while also integrating core academic concepts throughout the curriculum. Today's agricultural education courses prepare students to enter a global marketplace with the knowledge and skills necessary to be successful (Phipps et al., 2008). The classroom is the backbone of a successful agricultural education program and provides students with the instruction necessary to take advantage of the other components of agricultural education. All students in agricultural education programs will have quality classroom and laboratory experiences, which is why it is an essential component of the agricultural education model.

Agricultural Education courses have changed over the years to meet the demands of society along with the shifts in learner needs. The students that are in today's agricultural education courses are much more progressive than in the past and societal/learning needs have changed drastically with advancements in communication and technology access (Caton-Rosser, Looney, & Schneider, 2014). This means that students now require high-level cognitive learning and a much more personalize instructional design (Roberts, Harder, & Brashears, 2016). Student interests and motivation for learning have also changed over the years and it is important to understand and appropriately address these learning needs (National Research Council, 2009). Students do not have one simple learning style that they use at all times and styles shift over time alongside society changes (Roberts, Harder, & Brashears, 2016). Today's students tend to utilize a blend of different learning styles, which are dependent upon their individual motivations and

interest in the subject/content (Richlin, 2006). It is important to understand how student learning has shifted over the years so that educators can design effective instruction in agricultural education courses that will best meet the learning needs of each student.

Agricultural education courses have placed a heavier emphasis on academic integration in recent years. This new emphasis is partially due to an increase in mandated standardized testing along with increased graduation requirements. This educational shift has created the need to establish more relevance and rigor among agricultural education courses. Agricultural programs have greater competition with other elective and academic courses than they did in the past. The course competition that is happening at the secondary level is also being driven by the increase in college entrance requirements. Therefore, it is essential that classroom/laboratory experiences provide students with opportunities to develop their resume and procure skills that will contribute to their post-secondary educational plans. This will be essential in recruiting and retaining quality students while also ensuring that they are adequately prepared for their future and a global marketplace.

Science integration is a cornerstone of a quality agricultural education program. Agriscience courses help students make critical connections between scientific concepts and real application. Science is naturally embedded within the agriculture curriculum and must simply be extrapolated by the teacher and presented systematically to the class. “Agriscience is instruction in agriculture emphasizing the principles, concepts and laws of science and their mathematical relationship supporting, describing, and explaining agriculture” (Buriak, 1989, p. 18). Agriscience laboratory activities provide students with the opportunity to construct scientific knowledge, skills, and value through hands-on learning experiences (Warner, Arnold, Jones, & Myers, 2006). Agricultural educators must be have a basic understand of the scientific principles

necessary to facilitate an educational environment, which will help students utilize the scientific method and develop inquiry skills (Enderlin & Osborne, 1992). The integration of math and science in agriculture courses adds rigor and relevance to the curriculum, which assists with positive program perception and increased course validation among students and parents.

Agricultural programs across the United States have developed and implemented plans to meet changing demands, while also ensuring the overall educational initiative of agricultural education. Johnson (1995) found that agricultural education teachers felt that integrating science concepts in agriculture would provide justification for science credit and increase overall enrollment. Teachers also felt that offering science credit in agricultural courses would prove valuable to the post-secondary plans of each student and promote a positive image of agricultural education programs. Science has been a fundamental component of agricultural education dating back to the passage of the Hatch Act (Budke, 1991).

In recent decades, many key individuals including policy makers, educators, and employers have indicated their support for the integration of academic content in career and technical courses in an effort prepare students for a changing economy and job market (Stasz & Grubb, 1991). However, the key is to promote agricultural education and extrapolate the academic content that is imbedded within every lesson in a way that all students and parents can understand. This will allow all individuals involved in the educational process to understand the rigor and relevance of agricultural education courses and the positive impact they can have on student success far beyond their secondary education.

The brain-based theory provides justification for science integration in agricultural education courses. This theory maintains the idea that different disciplines are related to one another and share concepts that the brain can identify and sort accordingly (Caine & Caine,

1994). Evidence suggests that science integration in agricultural courses causes overall student performance in education to increase as well (Roegge & Russell, 1990). This provides a unique educational opportunity as almost every student in the United States takes a minimum of one career and technical education course during their secondary education and forty-three percent take at least three courses in a specific career cluster (Silverberg, Warner, Fong, & Goodwin, 2004). This opportunity does not only apply to science, but all other academic subjects should be integrated as well. This level of enrollment in career and technical courses also provides the opportunity to connect reading and mathematic skills to real world application. Many of these academic areas are naturally embedded in agricultural courses and can enhance a student's educational experience, while also further developing their resume and skills required for their post-secondary plans (Stone, Alfeld, Pearson, Lewis, & Jensen, 2005).

Academic integration is an inherit component of an effective agricultural education course and is recognized by the Georgia State Standards. This connection to academics is embedded in every agricultural course offered, which is presented in a student's classroom and laboratory experiences. It is critical to gain an understanding of the subject area interest of students so that educators can design classroom instruction that meets the educational needs/desires of students, while also providing quality academic integration. This will assist in tailoring educational program in agriculture to the needs of the students, but it will also create a program that students will enjoy and will ultimately lead to greater enrollment and the potential to impact more students. This also assists in the overall goals and mission of agricultural education and leads to the development and promotion of a more agriculturally literate society. Classroom and laboratory experiences in agricultural education provide students with much more than knowledge of the agriculture industry and academic connection opportunities. These

educational experiences contribute to leadership development and personal growth, which will promote student success far beyond their secondary education. Classroom and laboratory experiences in agricultural education ultimately develop students into responsible citizens who can be competitive in a global economy and ever-changing workforce (Hughes & Barrick, 1993).

The teaching and learning process in agricultural education has been negatively affected by consistent pedagogical constraints including budget cuts, materials, and changing technological advancements (Roberts, Harder, & Brashears, 2016). The negative impact that these constraints have on the classroom and laboratory component of agricultural education cannot be ignored. However, there is little that can be done to remediate this issue quickly and therefore it is critical to explore other methods of ensuring that the classroom and laboratory component of agricultural education is still meeting the educational needs of students. This can be accomplished by ensuring that instructional programs in agricultural education are designed in such a way that rigor and relevance is a fundamental component of every course.

Agricultural education courses must be designed effectively in order to ensure that rigor and relevance is established. This means that each course should be designed to provide students with quality educational experiences that will ultimately contribute to their future success. Courses should be designed based upon the needs and activities of the local community. Teachers should follow a curriculum/course design process that employs a needs assessment, program objectives, and program evaluation. Each of these steps are essential in the effective design of courses in agricultural education that will be tailored to meet the changing needs of students and remain relevant within developing communities. The circular curriculum design process (Figure 3) demonstrates the steps and consistent evaluation of effective agricultural education courses and curriculum (Phipps et al., 2008).

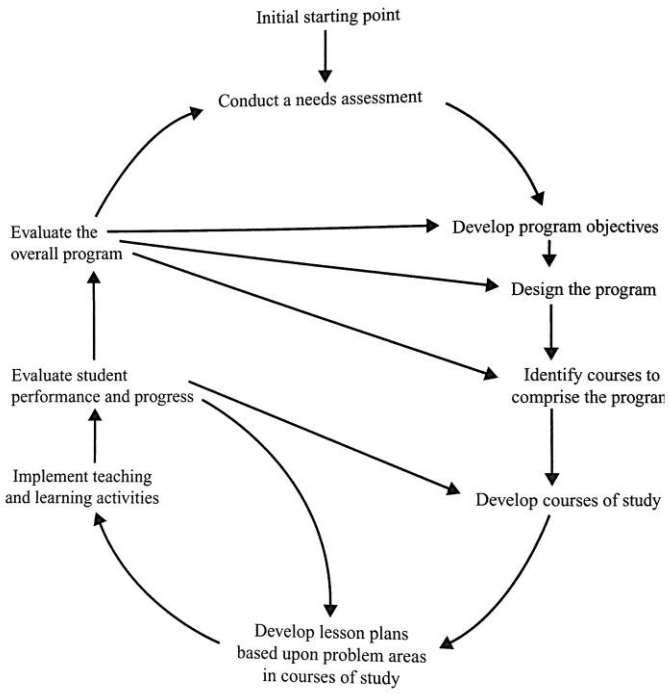

Figure 3. Model for Planning Courses of Study in Agricultural Education (Phipps et al., 2008).

Quality learning in agricultural courses should help student to progress from lower-level educational experiences like rote memorization to higher-level cognitive abilities including interpretation, analysis, and evaluation abilities (Edgar, 2012). This type of educational experience should make the learner become part of the process of learning, instead of simply being the recipient of knowledge. It is critical for students to be able to apply what they have learned to similar situations in the future. This can only be accomplished by designing classroom and laboratory experiences where students have to solve complex problems by applying their current understanding of the situation and utilizing that knowledge to solve specific educational objects/complex problems (Roberts, Harder, & Brashears, 2016). This has become exceedingly important because today's employers require employees to possess complex problem solving skills along with thinking, writing, and computing skills (National Research Council, 2009).

Technology has become a fundamental component of today's generation of learners. Technology has both advantages and disadvantages when it comes to classroom and laboratory

experiences in agricultural education. Millennials are the first generation of learners that have had access to the Internet and advanced technology their entire lives (Taylor, 2014). This has contributed to a generation of learners that can be described as detached and unmotivated (Pintrich & Zusho, 2007). Networking with friends is important to today's learners and it is important to understand this when designing classroom instruction. Therefore, classroom instruction in agricultural courses should be designed to provide students with meaningful and engaging educational opportunities that utilize their interests as an educational strength and not a weakness (Roberts, Harder, & Brashears, 2016).

It is critical to attract students to agricultural education programs in order to promote agricultural literacy, but to also meet the need of individuals working in agricultural science and technology. The agriculture industry is in critical need of a generation of individuals interested in food, fiber, and natural resources. This new generation of agriculturists will be tasked with the problem of figuring out how to meet the increasing demands of agriculture, along with increasing the food supply in relation to the growing population. Agricultural education courses are also tasked with the responsibility of educating those that do not understand the agriculture industry, thus contributing to a more informed society that will foster the support of agriculture and future initiatives (Mercier, 2015). This can only be accomplished through the design of effective classroom and laboratory instruction in agricultural education courses that is both beneficial and attractive to students. Agricultural education courses need to shift away from a passive form of teacher-centered instruction to an active student-centered instructional design (Arum & Roksa, 2011). The need for this shift in instructional design is caused by the learning needs of a new generation combined with an extremely diverse student population (Woolfolk, 2010). It is critical to understand the learning needs and desires of the new generation of learners

and ensure that instruction in agricultural education courses is appropriately designed to effectively meet those needs.

The instructional design process in agricultural education is ultimately responsible for the subsequent effect that it has on student learning, interest, motivation, and matriculation. The "best teaching cannot be found in particular practice…but in the attitudes of the teachers, in their faith in their student's abilities to achieve, in their willingness to take students seriously and let them assume control of their own education, and in their commitment to let all policies and practices flow from central learning objectives" (Bain, 2004, p. 78-79). This is important to remember when designing classroom and laboratory experiences in agricultural education. In order to develop a generation that is capable of meeting the challenges that the agriculture industry will face in the future, educators must design classroom instruction that will lend itself to long-term retention and application (Pense & Leising, 2004). The ability of student to apply what they have learned to solve complex problems in agriculture will be essential in meeting the increasing demands placed on the industry.

Classroom and laboratory instruction needs to be designed to meet the changing needs of today's learners. This includes the determination of what students find valuable, interesting, and personally/professionally rewarding (National Research Council, 2009). It is critical to understand that students do not have one learning style that is applied to all situations. Instead, learners have a variety of styles that change among generations and between various different educational experiences (Richlin, 2006). Therefore, it is important for an agricultural educator to shift from a traditional and direct style of teaching and pursue a more constructivist approach (Doyle, 2011). Students learn better when they are immersed in the learning process and construct their own knowledge with the aid of an expert facilitator of learning. The development

of a meaningful learning environment in agricultural education is essential in accomplishing the overall goals of the program. It is important to ensure that student learning styles and needs are appropriately considered in the design of quality classroom and laboratory experiences (Roberts, Harder, & Brashears, 2016).

Classroom and laboratory instruction is a fundamental component of any quality agricultural education program. It is a major contributing factor to student interest and the overall image of agricultural education. Therefore, it is essential to select the appropriate theoretical foundational and instructional design techniques that effectively meet the learning needs of every student. Quality instruction in agricultural education should incorporate the use of many different teaching approaches and theoretical foundations that will address the changing needs of a new generation of learners. Agricultural education has typically met this need by providing students with a variety of educational approaches/strategies, learning environments, and application opportunities (Phipps et al., 2008). However, it is increasingly important to ensure that these needs are being met appropriately and that agricultural education can keep pace with a changing society.

American society is constantly becoming more diverse and teachers must be able to understand the diverse learning needs of all students and be prepared to utilize strategies necessary to address a variety of ability levels, cultural backgrounds, learning styles, and interests. Throughout the history of education, there have been students who have had difficulties succeeding in traditional classroom and educational environments. Traditionally, these students were labeled as "special needs" and were removed from the normal classroom environment to receive individualized education (Phipps, et al., 2008). "Learners with special needs are defined as students who could benefit from adaptations to the learning environment" (Phipps et al., 2008,

p. 356). However, this created issues regarding self-concept and self-confidence among students who were removed for a specialized education. Students with these needs are no longer restricted to self-contained classrooms due to advancements in educational practices. More students qualify and receive individualized education due to increases in diversity of learners, a changing society, and improved methods for identifying educational needs. Therefore, teachers need to understand the diverse learning needs of students and understand how to appropriately and effectively meet their educational needs and goals (Phipps et al., 2008).

Learners with special needs are not limited to those individuals with specific learning difficulties. There are four categories of students with special learning needs including students with disabilities, gifted and talented students, culturally and linguistically diverse students, and students at risk for failure in school. Teachers need to be aware of these categories of student needs and implement specific adaptations to the curriculum in order to provide them with the most appropriate educational environment. Agricultural education teachers are in a position to have a positive impact on students with specialized learning needs. Agricultural educators and the curriculum provide a unique opportunity to get to know each learner and gain a better understanding of how to provide them with a successful learning environment. Often times, this will require adaptations to the teaching strategies used for each lesson to ensure that the needs of all students are being addressed (Phipps et al., 2008).

Agricultural education continues to attract a diverse population of students, which makes culturally relevant teaching a critical component of successful agricultural education programs (Phipps et al., 2008). “Multicultural education requires that educators not attempt to melt away individual differences of culture in a classroom, but rather acknowledge, celebrate, and accommodate such differences in teaching and learning” (Phipps et al., 2008, p. 361). Culture is

an important component of the teaching and learning process. Agricultural educators should understand the cultural norms and values of each student in the class so that instruction can be adjusted to best facilitate learning.

It is important for teachers to develop strategies for connecting with students to determine learning styles and educational needs. This includes an understanding of the stages of student development, including psychological development and sense of self. Agricultural educators typically work with students between the ages of eleven to eighteen who are at various stages of their psychosocial development. Agricultural education provides a natural environment for students to develop socially, a sense of self-worth, and advance toward the service of a larger purpose. Agricultural educators must understand the importance of meeting the diverse learning needs of students and its affect on the teaching and learning process (Phipps et al., 2008).

Classroom and laboratory experiences in Georgia middle school agricultural education courses provide students with quality instruction in various aspects of the agriculture industry, while also integrating academic subject areas including math, science, language arts, and social studies. Georgia performance standards for middle school agricultural education are designed to provide students with an understanding of the agricultural career pathways offered at the local high school. Middle school agricultural education is divided into three courses in a sequence from sixth to eighth grade. Middle school students typically enroll in an agricultural education course each year during their middle school education. Each course has different objectives and performance standards that should be mastered upon completion. Each course also focuses on specific areas of agriculture and incorporates a variety of different areas including FFA, SAE, agricultural history, Georgia agriculture, plant science, animal science, forestry, natural resources, leadership, agricultural careers, agriscience, agribusiness, and agricultural mechanics.

These courses assist in the development of an agriculturally literate society, while also promoting continued enrollment in secondary agricultural education programs (Woods, 2016). It is critical to understand the impact that these middle school courses have upon student interest and continued enrollment in agricultural education.

Middle school agricultural education exposes students to the many opportunities available in the agriculture industry. Providing agricultural education to students in middle school has the potential to substantially influence a student, ultimately shaping their career plans and future life decisions (Anderman & Maehr, 1994). Middle school learners are unique and must be recognized independently of other learners within agricultural education due to the nature of their learning style and needs (Merenbloom, 1988). Therefore, it is critical to ensure that the middle school agricultural education curriculum is designed to meet the developmental needs and specific interests of the learners (National Middle School Association, 2003). Curriculum design should account for the unique needs of this group of learners and the design of educational experiences must be done appropriately (Eichhorn, 1966).

Middle school agricultural education programs must be designed independently from other agricultural programs to ensure that the educational needs of this specific group of learners are being met (Rosetti et al., 1992). However, even with the importance that is placed on curriculum design in middle school agricultural education, only a few studies have investigated the unique needs of middle school agricultural education teachers as they design and implement the curriculum (Trexler & Hikawa, 2001). Studies have indicated that teachers need assistance when effectively integrating agricultural instruction in the classroom (Humphrey, Stewart, & Linhardt, 1994; Terry, Herring, & Larke, 1992). Therefore, research regarding the middle school

agricultural education curriculum, effective design, and implementation is essential in order to meet the educational needs of middle school learners.

The experiences that students have in the classroom and laboratory component will have an impact upon their perception of agricultural education their subsequent decision to continue enrollment. Classroom instruction in middle school agricultural education served as a variable within this study because it plays a crucial role in a student's overall experience in middle school agricultural education. This study described the teacher's perception of the experiences in the middle school agricultural education curriculum and its relationship to secondary enrollment. Classroom/laboratory experiences are part of middle school agricultural education and were described in relation to secondary enrollment. The classroom/laboratory experiences, specifically related to the Georgia state standards, were described by the middle school agriculture educators regarding their perception of the importance of each standard and the level of competence that students have upon the completion of each standard. This helps ensure that the middle school agricultural education curriculum is designed to meet the educational needs and desires of the modern student. There is currently a lack of research regarding middle school agricultural education classroom/laboratory experiences and how they relate to secondary enrollment. This study also sought to fill the research gap and make efforts to answer the research question/objectives.

Theoretical Framework

Experiential Learning Theory

Kolb's (1984) experiential learning theory (Figure 4) served as the foundational epistemology of this study. "The term experiential learning is a broad term, generally used by educators to describe a series of pragmatic activities sequenced in such a way that it is thought to

enhance the educational experience for the student learner" (Clark, Threeton, & Ewing, 2010). Experiential learning has always been a cornerstone of agricultural education and a guiding theory for curriculum design (Roberts, 2006; Knobloch, 2003). "Agricultural education has always had a strong orientation toward learning by doing, or experiential learning" (Zilbert & Leske, 1989, p. 1). However, experiential learning is more than just learning by doing and educational experiences must be structured so as to strengthen the connection between cognitive learning and life skills (Wulff-Risner & Stewart, 1997). Kolb maintained the idea that learning "is not the special province of a single specialized realm of human functioning such as cognition or perception" (Kolb, 1984, p. 31).

Experiential learning theory views learning as an integrated approach, which includes learner characteristics and the relationship with the individual experience (Kolb, 1984). Experiential learning is closely related to constructivism, which posits that learning is a function of developing meaning from experiences (Doolittle & Camp, 1999). Agricultural educators provide students with hands-on learning opportunities in order to facilitate a better understanding of content and to develop concrete critical thinking and problem solving behaviors (Mabie & Baker, 1996). This is evident through the variety of experiential learning opportunities provided to students in the agricultural education curriculum including travel opportunities, supervised agricultural experience programs, problem solving methods, and service-based learning (Roberts, 2006). Experiential learning is a critical component of successful agricultural education programs because it engages students in the learning process and promotes critical thinking and problem based learning (Wozencroft, Pate, Griffiths, 2014).

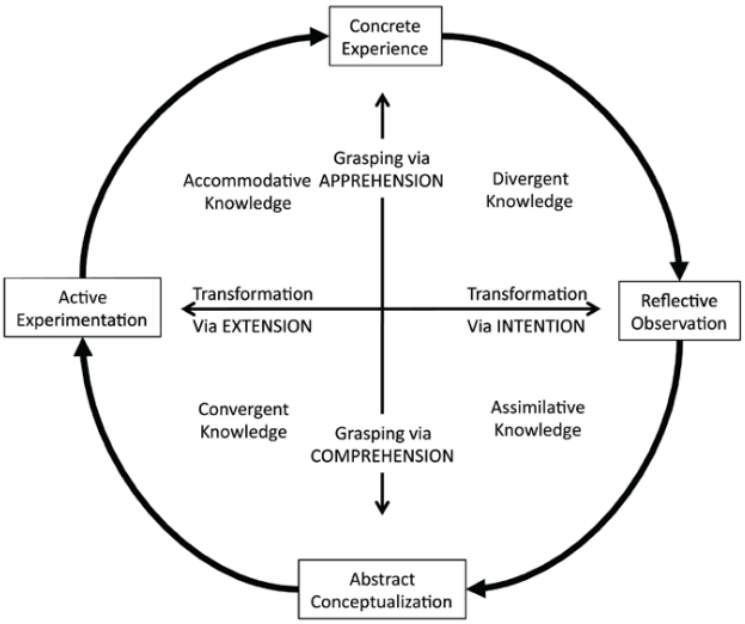

Figure 4. Model of Experiential Learning Process (Kolb, 1984).

Kolb (1984) stated that learning is a "means for examining and strengthening the critical linkages among education, work and personal development" (p. 4). Experiential Learning Theory (ELT) presents two dimensions of learning where knowledge is obtained through experiences that have been grasped and transformed (Kolb, 1984). Experiential Learning Theory model (Figure 4) demonstrates two different methods of grasping experience including concrete experience and abstract conceptualization. The model also presents two methods of transforming experience including reflective observation and active experimentation (Kolb & Kolb, 2009). These two distinct dimensions of learning ultimately result in four forms of knowledge/learning styles including divergent knowledge, assimilative knowledge, accommodative knowledge, and convergent knowledge (Kolb, 1984). Experiential learning theory has consistently gained acceptance in educational settings and serves as valuable component of the modern teaching and learning process (Kolb & Kolb, 2006).

Kolb's experiential learning model is based upon theories of personal experience (Ausburn & Brown, 2006). The theory is based upon six propositions including:

> 1. Learning is best conceived as a process, not in terms of outcomes. To improve learning in higher education, the primary focus should be on engaging students in a process that best enhances their learning as a process that includes feedback on the effectiveness of their learning efforts. 2. All learning is relearning. Learning is best facilitated by a process that draws out the students' beliefs and ideas about a topic so that they can be examined, tested, and integrated with new, more refined ideas. 3. Learning requires the resolution of conflicts between dialectically opposed modes of adaptation to the world. Conflict, differences, and disagreement are what drive the learning process. In the process of learning one is called upon to move back and forth between opposing modes of reflection and action and feeling and thinking. 4. Learning is a holistic process of adaptation to the world and not just the result of cognition. Learning involves the integrated functioning of the total person thinking, feeling, perceiving, and behaving. 5. Learning results from synergetic transactions between the person and the environment. 6. Learning is the process of creating knowledge. (Kolb & Kolb, 2005, p. 194)

Kolb's model (Figure 4) demonstrates that an experience grasped through apprehension and then transformed through intention ultimately results in divergent knowledge, while an experience grasped through apprehension and transformed through extension results in accommodative knowledge. Kolb also noted that an experience grasped through comprehension and transformed through intension would yield assimilative knowledge, while an experience grasped through comprehension and transformed through extension would result in convergent knowledge (Kolb, 1984). These unique learning styles are the result of several factors including

personality type, educational specialization, professional career, current job role, and adaptive competencies (Kolb, Boyatzis, & Mainemelis, 2001). In order to effectively facilitate learning, an experience must be grasped by the learner as well as be relevant and meaningful. Students are able to effectively transfer knowledge to long-term memory when experienced through an active learning process (Knapp & Benton, 2006).

Learning is a function of the tension between the four learning modes, which occurs in a cyclical process (Kolb & Kolb, 2005). Kolb believed that the learning process could begin at any stage of the cycle (Roberts, 2006). The flow of the model traditionally begins with a concrete experience, which initiates the learning cycle ultimately cycling back around to new concrete experiences and starting the process over again. While this process applies to all experiential learning, it is important to understand that all learners are unique and therefore may not follow a rigid flow. Kolb (1984) noted that, "the learning process is not identical for all human beings. Rather, the physiological structures that govern learning allow for the emergence of unique individual adaptive processes that tend to emphasize some adaptive orientations over others" (p. 62). This means that an individual's experiences, learning needs, and heredity play an important role in and individual's preferred learning mode (Kolb, 1984). The original ELT model proposed only four learning styles, however this model has been expanded to nine (Figure 5), which provides a better description of the various learning preferences (Kolb & Kolb, 2005).

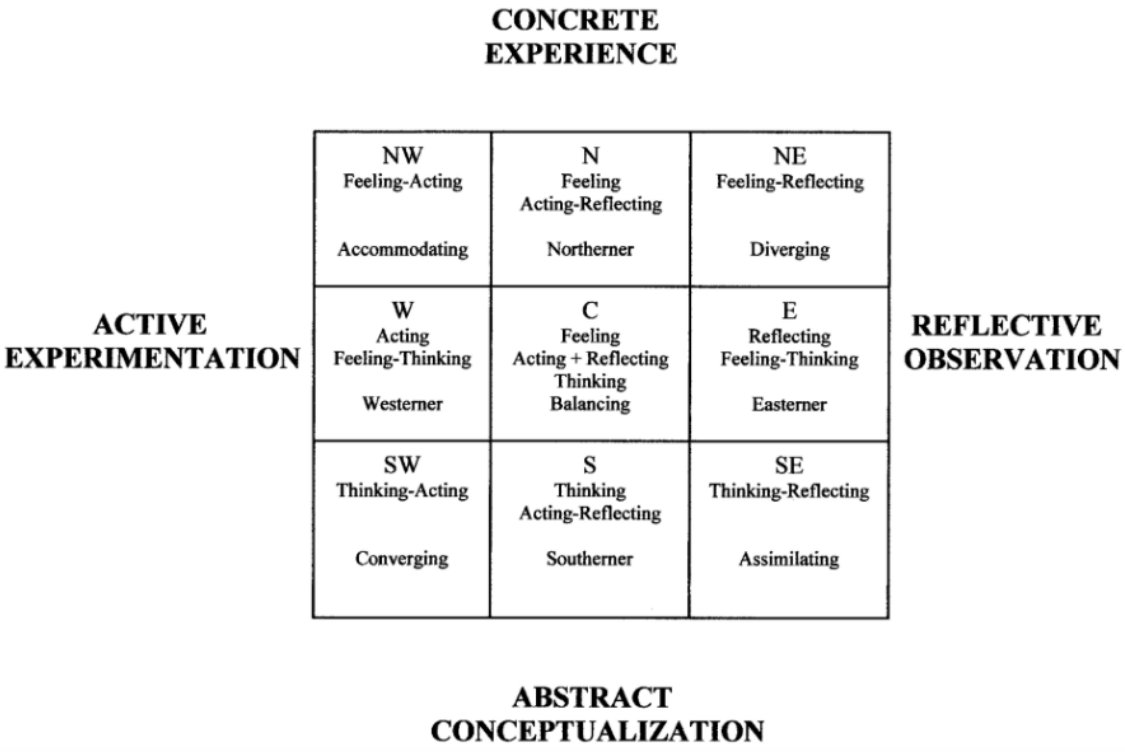

Figure 5. The Nine-Region Learning Style Type Grid (Kolb & Kolb, 2005).

Experiential learning is a critical component of agricultural education and is the foundational component for all three components of the agricultural education model. Agricultural education provides a natural environment for experiential learning and provides students with the opportunity to move beyond the classroom and into relevant agricultural contexts. The cyclical learning process of ELT provides an excellent framework to the existing agricultural education program model. The three components of agricultural education align with the learning modes presented in the ELT model. Classroom/laboratory instruction closely aligns with the abstract, FFA aligns with concrete and reflective components, and SAE can be viewed as the field project and converging aspect. Agricultural education naturally provides students with experiential learning opportunities in all learning modes through participation in the three components of agricultural education (Baker, Robinson, & Kolb, 2012).

Experiential learning in agricultural education requires consistent support from the instructor. Teachers are responsible for guiding and facilitating the experiential learning process. The agricultural educator must help students to connect the experience to a student's prior knowledge and personal interests. Many teachers fail to realize the importance of the connection between the teacher and the experience. Often times, too much focus is placed on structuring the experience and not enough on properly facilitating it. Agricultural educators play an important role in each phase of the learning process from concrete experience to active experimentation and ultimately to another concrete experience. Teachers must support students throughout this learning process in order for it to be effective. This also means that teachers must purposefully design the curriculum in order to provide students with the experiences necessary to initiate the learning process. While ensuring a curriculum centered around experiential learning may be more time consuming, in the end it will yield better learning environment for all learners. Often times, teachers design a curriculum focused on objectives and standards rather than experiences. This causes a decrease in active student learning and will ultimately result in a student who is able to pass a test, but will forget the content upon completion. The agricultural education curriculum naturally lends itself to experiential learning and this advantage and strength should not be ignored in the curriculum design process (Baker, Robinson, & Kolb, 2012).

Throughout the history of agricultural education, many individuals have felt that SAE has been the primary experiential learning component (Benson, 1981). However, Kolb maintains the foundation that all learning is experiential and therefore is critical in all areas of agricultural education (Kolb, 1984). Experiential learning lends itself to inclusion in all three components of agricultural education, which is evident in the comprehensive model for secondary agricultural education (Figure 6). The authors of this model were not attempting to create or promote a new

model for agricultural education, but instead were demonstrating the role of experiential learning in all three components of agricultural education. This model demonstrates the cyclical learning process found within each component of agricultural education and how each component interacts to provide a student with a complete experiential learning experience in agricultural education (Baker, Robinson, & Kolb, 2012).

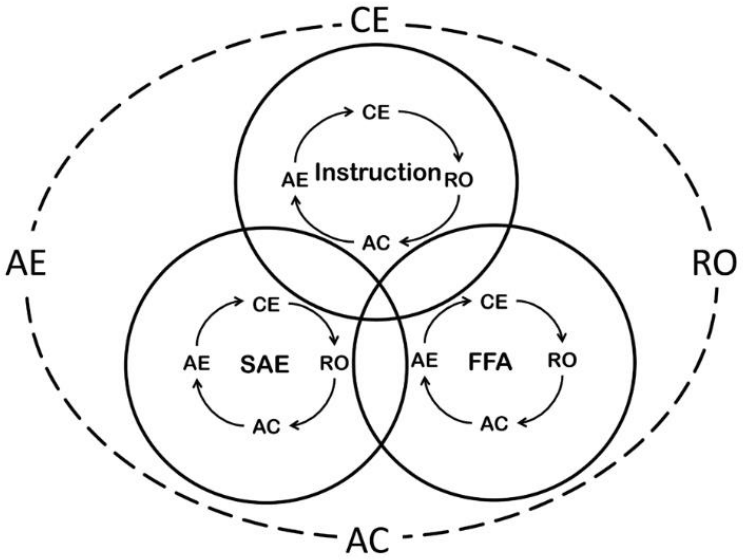

Figure 6. Comprehensive Model for Secondary Agricultural Education (Baker, Robinson, & Kolb, 2012).

The foundation for the model (Figure 6) is the belief that experiential learning is a part of the three components of agricultural education. It is important for agricultural educators to understand the ELT in order to be able to effectively design curriculum and ensure that appropriate experiences are being provided to students on a consistent basis. Experiential learning is more important for today's youth than ever before. Modern students are taught to focus upon concept/standard mastery so that they can pass a standardized test. Experiential learning opportunities in agricultural education help students to make critical links between academic learning and real-world application. Experiential learning opportunities should be provided to students in all three components of agricultural education and not disproportionately

over emphasized in the FFA/Leadership component. Student learning experiences in the SAE component are critical in the overall learning process and preparation of students for future success (Spiess, 1992). The SAE component of agricultural education allows students to apply their knowledge to real experiences, which is critical for their post-secondary education or employment (Danneberger, 1994). This application will help student to become problem solvers, instead of test takers and will ultimately better prepare them for entry into a global and competitive workforce (Baker, Robinson, & Kolb, 2012). Knobloch (2003) stated that, "Agricultural educators who engage students to learn by experience through authentic pedagogy will most likely see the fruits of higher intellectual achievement, not only in classrooms and schools, but more importantly, in their roles as adults as contributing citizens of society" (p. 32).

There are many prominent theories that support and define the context of experiential learning. Roberts (2006) stated, "theory purports that the learning process is not independent from the context in which it occurs" (p. 23). Vygotsky's (1978) socio-cultural theory maintains the belief that learning must include a complex interaction between the learner and his/her environment. Vygotsky believed that cognition occurred twice, once at the social level, followed by the individual level. This belief is in agreement with Kolb's complimentary process of apprehension/comprehension and assimilation/accommodation (Kolb, 1984). Experiential learning is also supported by the situated learning theory, which indicates that learning occurs in a social world. Situated learning theory identified learning as a process of active observation and participation in the social system (Lave & Wenger, 1991). Dale (1946) presented the cone of experience to indicate that experiences occur in a variety of levels from concrete (direct) to abstract (verbal symbols). Joplin (1981) presented an experiential learning cycle that identified a continuum of experiences from mini to maxi. This continuum of experiential learning

demonstrated the range of experiences from a small quick experience to an entire curriculum design. Steinaker and Bell (1979) presented a taxonomic sequence to describe the outcomes of experiential learning through five experiential learning objectives including exposure, participation, identification, internalization, and dissemination. Each of these prominent theories defines and supports the context of experiential learning, however there is a great deal of variability regarding the exact meaning (Roberts, 2006). These differences are evident in the type of educational setting, which includes education activities from formal (classrooms learning/planned) to informal (incidental learning/unplanned) (Etling, 1993).

Roberts (2006) developed the model of experiential learning contexts based upon the four dimensions of prominent theories that support experiential learning. The model was based upon the four dimensions of level, duration, intended outcome, and setting (Figure 7).

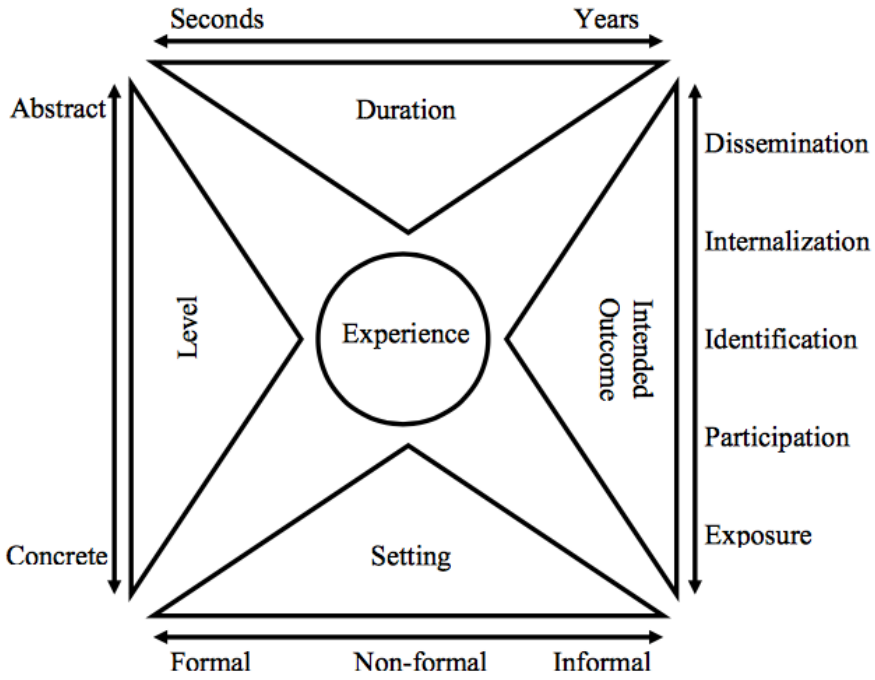

Figure 7. Model of Experiential Learning Contexts (Roberts, 2006).

The model of experiential learning contexts (Figure 7) is based upon the prominent theories that define the context of experiential learning including Dale's Cone of Experience, Joplin's Scope

of Experiential Learning, Steinaker and Bell's theory of intended outcomes, and the variability of educational settings in which experiential learning can occur (Dale, 1946; Joplin, 1981; Steinaker & Bell, 1979, Etling, 1993). Experiential learning is a major component of agricultural education programs and is a theory-based cyclical learning process that requires an active learning process between a learner and the experience (Roberts, 2006).

Smith (2001) described experiential learning as the "sort of learning undertaken by students who are given a chance to acquire and apply knowledge, skills and feelings in an immediate and relevant setting" (p. 1). This context of experiential learning closely aligns with the philosophy of agricultural education and can also be applied to all learning environments (Knobloch, 2003). Students in agricultural education apply the knowledge and skills from their courses to solve complex problems within the industry. The experiential learning process requires an experience followed by sharing, process, generalization, and application (Mowen & Harder, 2005). This learning process involves a direct experiential encounter with a learning event, instead of applying a passive thought process (Figure 8). This includes active engagement from the student as opposed to a teacher-centered approach, which typically does not incorporate planned student interaction in the learning process (Borzak, 1981).

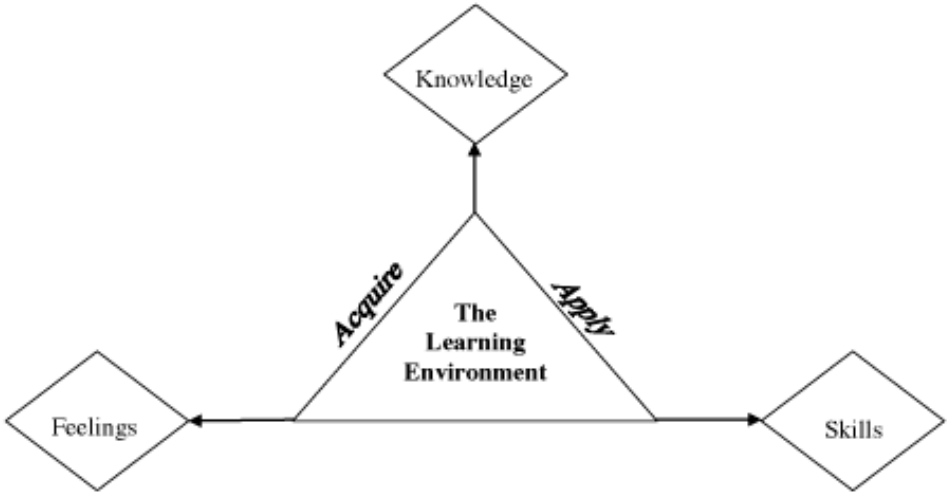

Figure 8. Experiential Learning via a Direct Educational Encounter (Borzak, 1981).

Houle (1980) described experiential learning as a student's reflection on involvement within everyday life (Figure 9). This is a less structured approach to the experiential learning model and can be viewed as a life-long learning process. This context of experiential learning represents learning as a function of the natural day-to-day experiences in life. It is also important to note that there are some forms of planned teaching strategies that utilize this type of experiential learning (Clark, et al., 2010).

Figure 9. Experiential Learning Throughout Life (Houle, 1980).

Experiential learning has multiple contexts, which are identified in several prominent theories of experiential learning. However, the direct educational encounter that has had the greatest impact on agricultural education is found within David Kolb's experiential learning theory (Clark et al., 2010). Experiential learning is more than just an educational method, lecture, or discussion. It is a way of organizing educational experiences so that students are able to establish organic connections between what they have learned and how it is applied. ELT is a method of curriculum development and delivery method that switches the learning environment to student–centered, rather than teacher-centered. Experiential learning is the best educational method by which to manage, direct, and facilitate student learning in agricultural education

(Briers, 2005). Experiential learning influences student perception and serves as a connection between classroom learning and the rest of the world (Horwood, 1995). It also increases critical thinking and provides students with a greater sense of responsibility (Griffin, 1992). "When learning is conceived as a holistic adaptive process, it provides conceptual bridges across life situations such as school and work, portraying learning as a continuous, lifelong process (Kolb, 1984, p. 32).

Conceptual Model

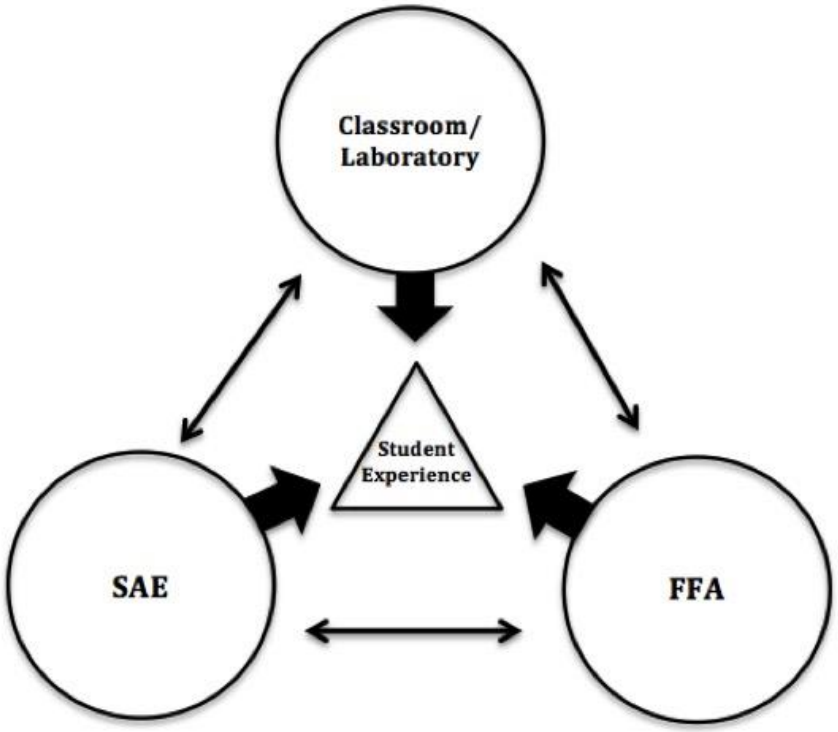

Figure 10. Conceptual Model Demonstrating the Interconnected Relationship Between the Curriculum/Experiences in Middle School Agricultural Education and the Relationship to Secondary Enrollment.

The conceptual model for the study (Figure 10) identifies the three components of middle school agricultural education and demonstrates the interconnected nature and subsequent

relationship to secondary enrollment. The components presented in this model are consistent with the most predominant model of agricultural education, which includes the interrelationships between classroom and laboratory instruction, supervised agricultural experience, and FFA (Phipps & Osborne, 1988). The conceptual model for this study demonstrates the importance of the three components of middle school agricultural education and how they can ultimately shape a student's perception of agricultural education, which contributes to secondary enrollment decisions. The model for this study operates within Kolb's experiential learning model, which served as the theoretical foundation for the study. This foundation indicates that experiences within each component of middle school agricultural education is a cyclical process, which contribute to the overall experience and perception of agricultural education as a whole. It is important to understand and evaluate the middle school agricultural education curriculum, including all three components of agricultural education, to ensure that it is meeting the needs of the modern student. This is critically important because it will ultimately impact their perception of agricultural education, thus affecting their subsequent secondary enrollment decision.

This study primarily focused on an evaluation of the middle school agricultural education curriculum as perceived by middle school agriculture educators. This provided a better understanding of whether or not the current curriculum was meeting the educational needs of the modern learner. However, this study also provided teachers with the opportunity to indicate their perception of the middle school agricultural education experiences that have the greatest influence upon secondary enrollment decisions upon completion of the middle school program. This provided an evaluation of current middle school agricultural education programs in regards to the three components of the complete program indicated in the conceptual model above, with specific focus on the curriculum standards. Data collected from this study assisted in determining

areas of the middle school curriculum that need attention, possible reconstruction, or teacher professional development. The data also provided a list of middle school agricultural education experiences that influence secondary enrollment as perceived by the teachers. These data can be used to ensure that programs are designed to meet the educational needs of students, which will lead to enhanced educational experiences, perception, and enrollment as students transition from the middle school to the high school. This model served as the foundation for this study and each component it contains is further analyzed and evaluated in the respective literature and theoretical sections of this manuscript.

Chapter Summary

The purpose of Chapter 2 was to present and provide a detailed description of the literature base, theoretical, and conceptual frameworks that served as a guide for this study. The chapter provided an in-depth evaluation of relevant literature that contributed to the overall study design. The literature detailed in this chapter was primarily focused on the three components of agricultural education including SAE, FFA, and classroom/laboratory instruction as they pertain to enrollment and curriculum design/evaluation.

Agricultural education prepares students with the knowledge and skills necessary to enter into a global economy and workforce. This is accomplished through experiences that help students connect academic learning with real-world application through an experiential learning approach. There is a lack of research on middle school agricultural education and the role that it has on student experience in agricultural education and its relationship to secondary enrollment. This is an important area for research because for many students it is their first experience in agricultural education and could potentially have a tremendous impact on their perception of agricultural education as a whole.

It is well recognized that agricultural education can have a positive impact on student learning and success beyond their secondary education. Therefore, it is essential to evaluate the middle school agricultural education curriculum to determine if it is meeting the learning needs of the modern student and assist teachers in areas of need. It is imperative to ensure that agricultural educators have the training and professional development necessary, to continue to provide educational experiences that are tailored to meet the needs of a changing and diverse student population. The following chapter provides a detailed description of the methods and procedures utilized in the completion of this study.

CHAPTER 3
METHODS

Introduction

The purpose of this study was to describe middle school agricultural education teacher perception of the curriculum and its relationship to enrollment in secondary agricultural education programs. The research objectives that guided this study were:

1. Describe the personal characteristics of middle school agricultural education teachers in the State of Georgia.
2. Describe the perceived importance of the Georgia Department of Education State Standards for middle school agricultural education curriculum by teachers.
3. Describe the perceived level of student competence on the Georgia Department of Education State Standards for middle school agricultural education by teachers.
4. Describe middle school agricultural education teacher's perceptions on how classroom/laboratory experiences, FFA experiences, and SAE experiences are related to a student's decision to enroll in a high school agricultural education course.
5. Determine the mean weighted discrepancy score by the teacher's perception of importance of the curriculum standard and the teacher's perception of student competence on the standard.
6. Describe mean weighted discrepancy scores by teacher's personal characteristics.
7. Describe teacher's perceptions of the influence of the experiences by teacher's personal characteristics.

Research Approach/Design

This study used a quantitative methodology. Quantitative research can be defined as "inquiry employing operational definitions to generate numeric data to answer predetermined hypotheses or questions" (Ary, Jacobs, & Sorensen, 2010). Ravid (2011) further defined quantitative research as research that focuses on the explanation of a cause-and-effect relationship, incorporates a small number of variables, and utilizes numeric data. "One of the real advantages of quantitative methods is their ability to use smaller groups of people to make inferences about larger groups that would be prohibitively expensive to study" (Holton & Burnett, 1997, p. 71). The primary objective of quantitative research is focused on measuring social reality. There are different types of quantitative research including survey research, correlational research, experimental research, and causal-comparative research (Sukamolson, 2007). This study used a quantitative research method and collected data via an online questionnaire. This method was selected due to the type of data being collected, its intended use, the research objectives, and the population under study.

This descriptive and correlational study used a quantitative non-experimental survey research design. Participants completed a three-part questionnaire. The first part of the questionnaire was designed to collect data on teacher's perceptions of the effects of middle school experiences on student's decisions to enroll in a high school agricultural education course. The second part of the questionnaire was designed to collect data on teacher's perceived level of importance on the Georgia State Standards for middle school agricultural education and their perception of student competence on those standards. The third part of the questionnaire was designed to collect data on the personal characteristics of the participants. The design is non-experimental because the variables within the study were not manipulated; only observed for

relationships and discrepancies (Ary, Jacobs, & Sorensen, 2010). The design also assisted in the collection of data necessary to evaluate the middle school agricultural education curriculum based upon the theoretical framework for the study. A quantitative survey design was used since this study sought to evaluate the curriculum based upon Kolb's ELT as a rationale for curriculum needs and relationship to secondary student enrollment (Dillman, Smyth, & Christian, 2009).

Population and Sample

The population for the study was all middle school agricultural education teachers in Georgia (*N*=97). A simple random sample (*n*=71) of the population was calculated using Cochran's (1977) sample size formula for continuous data and minimum return sample size. Cochran (1977) presents a formula to determine sample size and minimum return sample size using two key factors, "(1) the risk the researcher is willing to accept in the study, commonly called the margin of error, or the error the researcher is willing to accept, and (2) the alpha level, the level of acceptable risk the researcher is willing to accept that the true margin or error exceeds the acceptable margin of error" (p. 44-45).

$$\underline{n}_0 = \frac{t^2 \times \underline{S}^2}{d^2}$$

Where

- $\underline{n}_0$ is the minimum estimated sample size
- "t is the value for selected alpha level"
- "$\underline{S}$ is the estimate of standard deviation"
- "d is the acceptable margin of error" (Bartlett, Kotrlik, & Higgins, 2001, p. 47)

"If the sample size exceeds 5% of the population, Cochran's (1977) correction formula should be used to calculate the final sample size."

$$\underline{n}_1 = \frac{\underline{n}_0}{1 + \underline{n}_0 / Population}$$

Where

- "$\underline{n}_1$ is the required return sample size"
- "$\underline{n}_0$ is the required return sample size according to Cochran's formula" (Bartlett, Kotrlik, & Higgins, 2001, p. 47)

Agricultural education programs are designed to meet the needs of the local communities. Agricultural education teachers, along with the guidance of an advisory committee, design the curriculum to meet the local agricultural and community needs. Students receive different types of instruction in agricultural education depending on the type of agriculture found within the region that they live. Therefore, it was important to ensure that individuals within each area were represented within the sample in order to get an accurate reflection of the entire population. The Georgia Agricultural Education leadership divides the state into three regions and further divides these regions into six areas that represent these differences. Each teacher that meets the study's criteria had an equal opportunity to be selected for inclusion within the study. This ensured equal and random participation of teachers from each geographical area of the state. This method also ensured that the agricultural and program differences were reflected within the sample. This is critical because the geographic region where the middle school programs are located may influence experiences and the resulting perceptions/curriculum design. Figure 11 below indicates the regions and areas of Georgia that will be used for sampling.

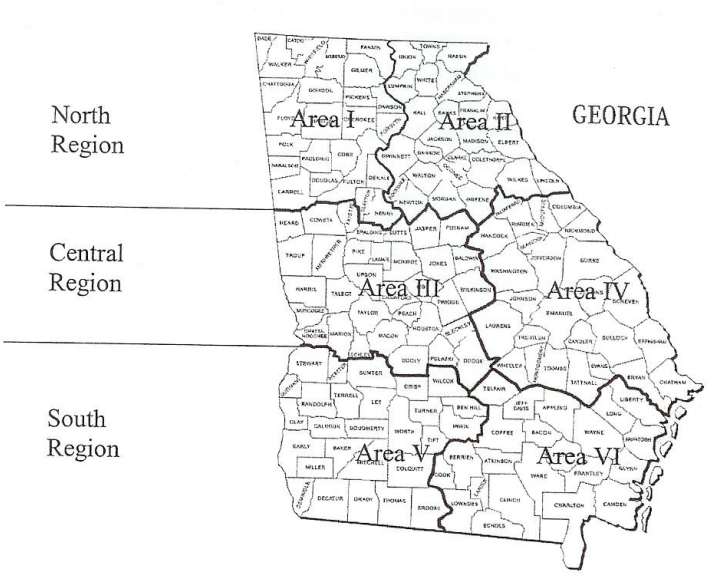

Figure 11. Area and Regional Map of Georgia Agricultural Education (Bridges, 2017).

The researcher compiled a list of all middle school agricultural education teachers in Georgia (*N*=97) and created a spreadsheet with teacher name, school, area, region, and email address. Teacher and school information was collected via the Georgia Agricultural Education website. Upon completion of the spreadsheet, the sample was drawn (*n*=71) from the population using Cochran's (1977) formula for continuous data and minimum return sample size. The use of voluntary questionnaires in educational and social research often yields response rates well below 100%. Salkind (1997) recommended increasing sample sizes by 40%-50% to account for non-response when utilizing surveys or questionnaires. Oversampling is often necessary to reach the desired sample (Fink, 1995). Regarding this process Cochran stated, "The variances of estimates are increased because the sample actually obtained is smaller than the target sample. This factor can be allowed for, at least approximately, in selecting the size of the sample" (p. 396). Oversampling can be accomplished through the use of four primary methods including (1) using a two step sampling method, (2) pilot study results, (3) utilizing response rates from previous studies on a similar population, or (4) estimating the response rate (Bartlett, Kotrlik, &

Higgins, 2001). An over sampling method was used via a combination of methods one, three, and four to ensure the appropriate response rate to obtain the desired sample. Estimates of response rate were determined through a consultation of a researcher in the field and a review of research within the field. A final list of teachers was created (N=95) to be contacted for participation in the study.

Middle school agricultural education teachers included in the oversample were contacted via the Qualtrics platform. Teachers received an email with information regarding the rationale for the study (Appendix II), which included a link to the questionnaire and a link to the information letter for the study (Appendix III). Follow-up emails were generated through the Qualtrics platform weekly until the needed sample was met. These emails went only to those individuals who had not started or completed all the items on the questionnaire. Follow-up emails were discontinued and the links remained active until responses ended naturally (N=72).

Instrumentation and Data Collection

A questionnaire designed in Qualtrics was used in this study to collect data (Appendix IV). This method allowed teachers to provide the information necessary to address the research question. The data collection process spanned approximately one month at the end of the school year (April-May 2017). Teachers were able to complete the ten to fifteen minute questionnaire on any computer or device and data was instantly gathered. This method eliminated the need to mail questionnaires and to extrapolate data by hand upon completion. The three-part web-based questionnaire was designed and conducted through Qualtrics, with the importance/competence section being based upon Borich's Needs Assessment Model (Borich, 1980).

The needs assessment model served as the guide for the development of the questionnaire so that teacher perception and discrepancy data could be collected. The first part of the

questionnaire collected data regarding teacher's perceived level of importance placed on each curriculum standard and the resulting level of student competence upon completion of each standard. The second part of the questionnaire was collecting data on teacher perception of experiences in middle school agricultural education that contribute to secondary enrollment. This section of the questionnaire was presented via a five-point Likert-type survey and based upon the experiences a middle school agricultural education student may have in each of the three components of the agricultural education program model. The third part of the questionnaire collected personal information on middle school agricultural education teachers in Georgia. A web-based questionnaire is the most appropriate method for data collection in this study because it allowed the researcher to collect a large quantity of data from teachers across the state. This allowed the researcher to include a larger number of participants that would more accurately represent the diversity of the population under study (Ary, Jacobs, & Sorenesen, 2010; Ravid, 2011).

Borich's needs assessment model is beneficial because it provides direct and unambiguous recommendations that can be used for program growth and development. The questionnaire was designed so that participants could provide data, which could then be weighted and ranked in order of priority regarding curriculum discrepancies in middle school agricultural education. The discrepancies provided a ranked order of standards that need attention, modification, or development. The use of this model within the study had five main steps including, developing the list of student experiences in middle school agricultural education for the questionnaire, administering the questionnaire to participants within the sample, ranking discrepancies according to the rating obtained on the questionnaire, comparing the discrepancies that ranked highest with the standards to determine areas where students feel they are not

receiving the appropriate level of involvement, and revising the curriculum or middle school agricultural education program model as necessary to meet student learning needs and desires (Borich, 1980).

The needs assessment model was primarily intended to measure the level of competence individuals had upon completion of some form of training program. However, Borich (1980) noted that this model could be modified, extended, and adapted to meet a variety of institutional needs. “The needs assessment model yields more data, and more understandable data, than many other types of follow-up questionnaires” (Borich, 1980, p. 42).

Data Analysis

This study utilized a combination of analysis procedures to appropriately analyze the data collected from each section of the questionnaire. Each objective of the study was analyzed and reported according to the type of data collected and the most appropriate method. Objective one was analyzed and reported using frequencies, percentages, means, and standard deviations as appropriate. Objective two was analyzed and reported using frequencies, percentages, means, and standard deviations as appropriate. Objective three was analyzed and reported using frequencies, percentages, means, and standard deviations as appropriate. Objective four was analyzed and reported using frequencies, percentages, means, and standard deviations as appropriate. ANOVA and t-tests were also conducted to determine if there were any statistically significant differences between the means of the three components of agricultural education. Objective five was analyzed and reported by calculating mean weighted discrepancy scores.

The curriculum assessment incorporated the use of mean weighted discrepancy scores (MWDS), which served as the statistical procedures for analyzing and displaying the data collected in this section. The resulting MWDS allowed the researcher to evaluate the middle

school agricultural education curriculum and identify discrepancies and areas for improvement. MWDS are calculated by subtracting the competency (level of experience) score from the importance (value/desire) score and then multiplying that number by the mean of the importance (value/desire) score for each competency (level of experience) (Borich, 1980; Joerger, 2002). The scores were then displayed in a variety of tables that demonstrated the ranked order of curriculum standards according to their individual MWDS. The tables provide a ranked order of standards that need attention due to high levels of discrepancy between teachers' perceived level of importance and student competence (Duncan, Ricketts, Peake, & Uesseler, 2006). These lists can then be used in the evaluation of the middle school agricultural education curriculum to ensure that the educational needs and desires of students are being met. This can assist in the development of programs necessary to assist teachers in areas of growth and professional development. The Borich Needs Assessment model and the use of mean weighted discrepancy scores are an effective method of identifying professional development needs of educators (Duncan, et al., 2006; Layfield & Dobbins, 2002). This model and data analysis method has been widely used and the desire to understand professional development needs of agricultural educators has been evident in many studies (Garton & Chung, 1997; Edwards & Briers, 1999; Garton & Chung, 1996; Mundt & Connors, 1999; Joerger, 2002; Heath-Camp & Camp, 1990; Lu & Miller, 2002; Ruhland & Bremer, 2002; Cannon, Kitchel, & Duncan, 2013, Duncan, et al., 2006; Dormody & Torres, 2002; Dobbins & Camp, 2000; Kotrlik, Redmann, Harrison, & Handley, 2000).

Objective six was analyzed and reported using MWDS by teacher personal characteristics and linear regressions. Objective seven was analyzed and reported using appropriate inferential statistics including t-tests and ANOVAs.

Measures of Validity and Reliability

Validity refers to the degree to which an instrument measures what it is intended to measure and the appropriate inferences and interpretations can be made using the collected data. There are two primary types of validity that were addressed within this study including content validity and face validity. Content validity describes how well the instrument measures what it intends to measure. This was addressed by ensuring that items on the questionnaire were a reflection of the Georgia Standards for middle school agricultural education and the experiences that appropriately align with the curriculum. Face validity refers to the extent to which an instrument appears to measure the intended variables (Ravid, 2011). Faculty and graduate students at Auburn University served as a panel of experts to ensure content and face validity of the instrument. No changes were made to the instrument as a result of this review.

Reliability is the ability of a measure to provide consistent results. A reliable measure can be used many times and yield very similar results each time. This refers to the level of consistency of an instrument and the degree to which it is able to repeatedly obtain the same results with the same individuals or groups. Measures of internal consistency were used to assess reliability. These measures were based upon the assumption that items correlate with each other and that people who answer one item in a specific way are likely to answer similarly on other items. Cronbach's Alpha Coefficient was used as the measure of internal consistency within this study. This indicates how well items and variables that measure a similar trait or concept correlate with one another and is considered to provide good reliability estimates (Ary, Jacobs, & Sorenesen, 2010; Ravid, 2011). Cronbach's Alpha ranges from 0 to 1 and the closer to 1, the greater the internal consistency. It is generally agreed that a coefficient greater that .7 is considered an acceptable level of reliability (Gliem & Gliem, 2003). Reliability for part one and

the three subscales classroom/laboratory experiences, FFA experiences, and SAE experiences were estimated by calculating and reporting Cronbach's Alpha. Cronbach's alpha was calculated to determine the reliability of experiences in agricultural education (α=0.92, 0.89, & 0.95) scales for classroom/laboratory, FFA, and SAE experiences respectively as it pertained to the influence on secondary enrollment. Reliability for part two and the three grade standards 6th grade, 7th grade, and 8th grade were also estimated by calculating and reporting Cronbach's Alpha. Cronbach's alpha was calculated to determine the reliability of importance of curriculum standards (α=0.72, 0.71, & 0.94) and student competence (α=0.83, 0.78, & 0.95) scales for 6th grade, 7th grade, and 8th grade respectively.

Chapter Summary

Chapter three identified the methods utilized in the study. The chapter included a detailed description of the research design, population and sample, instrumentation and data collection, data analysis, and measures of validity and reliability. The design of the study, including the identified analysis procedures, was discussed in detail along with the rationale for method selection. The methods outlined in this chapter were followed in an effort to collect the data necessary to provide insight into the research question and guiding objectives for the study.

This descriptive and correlational study utilized a non-experimental quantitative research design to describe teacher perceptions of the middle school agricultural education curriculum and it relationship to secondary enrollment. A simple random sampling method was used to select the participants in this study based on Cochran's (1977) sample size formula for continuous data and minimum return sample size. The sample included teachers from the six areas of Georgia divided by the agricultural education state staff to represent the agricultural diversity of the state. Each middle school agricultural education teacher in Georgia had an equal opportunity to be selected

for inclusion within the study. Teachers completed a two-part web-based questionnaire designed using the Qualtrics platform. A variety of analysis procedures were used to analyze and report on the collected data including frequencies, percentages, means, standard deviations, mean weighted discrepancy scores, t-tests, ANOVAs, and regressions. Appropriate steps were taken to ensure validity and reliability of collected data. The following chapter provides a description of the findings of the study.

CHAPTER 4
FINDINGS

This chapter presents the findings of the study after proper data analysis has been conducted to address each research question and objective. SPSS was used for data analysis and reporting purposes. The findings presented in this chapter are based upon the research questions and objectives that guided the study.

1. Describe the personal characteristics of middle school agricultural education teachers in the State of Georgia.
2. Describe the perceived importance of the Georgia Department of Education State Standards for middle school agricultural education curriculum by teachers.
3. Describe the perceived level of student competence on the Georgia Department of Education State Standards for middle school agricultural education by teachers.
4. Describe middle school agricultural education teacher's perceptions on how classroom/laboratory experiences, FFA experiences, and SAE experiences are related to a student's decision to enroll in a high school agricultural education course.
5. Determine the mean weighted discrepancy score by the teacher's perception of importance of the curriculum standard and the teacher's perception of student competence on the standard.
6. Describe mean weighted discrepancy scores by teacher's personal characteristics.
7. Describe teacher's perceptions of the influence of the experiences by teacher's personal characteristics.

Objective One: Describe the personal characteristics of middle school agricultural education teachers in the State of Georgia.

Demographic information from this study is presented in Table 1. Personal characteristics of the sample indicated consistency with the population in Georgia at the time of the questionnaire (Bridges, 2017; John Bridges, Personal Communication, October 20, 2017). Overall, 72 Georgia middle school agricultural education teachers responded to the questionnaire. This was one more (n=71) than the calculated sample size according to Cochran's (1977) sample size formula for continuous data and minimum return sample size. Female teachers comprised the largest gender group of participants (f=41, %=56.94), while male respondents represented 43.06% (f=31). All participants reported Caucasian/White for ethnicity (f=72, %=100). The teaching experience group with the highest number of participants were those with less than five years of teaching (f=31, %=43.06). The remaining participants represented the groups of teaching experience in the following breakdown 5-10 years (f=14, %=19.44), 11-15 years (f=15, %=20.83), 16-20 years (f=8, %=11.11), 21-25 years (f=3, %=4.17), and 26+ years (f=1, %=1.39). Over half of the participants reported living in a rural community setting (f=44, %=61.11), with the remaining participants reporting 16.67% (f=12) in urban community settings, and 22.22% (f=16) in suburban community settings. Further data analysis utilizing community setting will not be conducted due to a lack of explanation and understanding regarding the exact definition of each setting among participants. Participants represented all agricultural education regions of the state with 41.67% (f=30) reporting from the north region, 30.56% (f=22) from the central region, and 27.78 (f=20) from the south region. The agricultural education area of the state with the highest number of participants was area 2 (f=20, %=27.78). The remaining participants represented the other areas of the state in the following

breakdown area 1 (*f*=10, *%*=13.89), area 3 (*f*=10, *%*=13.89), area 4 (*f*=12, *%*=16.67), area 5 (*f*=13, *%*=18.06), and area 6 (*f*=7, *%*=9.72).

Table 1
Demographic Characteristics of Georgia Middle School Agricultural Education Teachers.

		f	*%*
Gender:	Male	31	43.06
	Female	41	56.94
Ethnicity:	Caucasian/White	72	100.00
Teaching Experience:	Less than 5	31	43.06
	5-10 years	14	19.44
	11-15 years	15	20.83
	16-20 years	8	11.11
	21-25 years	3	4.17
	26 + years	1	1.39
Community Setting:	Rural	44	61.11
	Urban	12	16.67
	Suburban	16	22.22
Ag Ed Region:	North	30	41.67
	Central	22	30.56
	South	20	27.78
Ag Ed Area:	Area 1	10	13.89
	Area 2	20	27.78
	Area 3	10	13.89
	Area 4	12	16.67
	Area 5	13	18.06
	Area 6	7	9.72

Objective Two: Describe the perceived importance of the Georgia Department of Education State Standards for middle school agricultural education curriculum by teachers.

Teachers were asked to rate 32 curriculum standards using the Likert-type scales described in the methods section based upon Borich's Needs Assessment Model. The 32 standards were further separated according to the grade level (6-8) in which they are taught. As reported in Table 2, the top five curriculum standards with the highest means in regards to perceived importance were 6th Grade "Students will demonstrate the importance of agriculture in

daily life" (*M*=4.74, *SD*=0.53), 7th Grade "Express the importance of agriculture in daily life" (*M*=4.67, *SD*=0.61), 8th Grade "Develop leadership skills, characteristics, and responsibilities" (*M*=4.67, *SD*=0.75), 6th Grade "Students will state the importance of Georgia agriculture" (*M*=4.64, *SD*=0.56), and 8th Grade "Develop an understanding of the FFA organization" (*M*=4.60, *SD*=0.71).

Grand means were reported for each grade level based upon each curriculum standard within that grade level. As reported in Table 3, the grade level with the highest grand mean in regards to perceived importance of the curriculum standards was 7th grade (*M*=4.31, *SD*=0.52). Sixth grade reported a grand mean of 4.28 (*SD*=0.50) and eighth grade reported a grand mean of 4.28 (*SD*=0.57).

Objective Three: Describe the perceived level of student competence on the Georgia Department of Education State Standards for middle school agricultural education by teachers.

Teachers were asked to rate 32 curriculum standards using the Likert-type scales described in the methods section based upon Borich's Needs Assessment Model. The 32 standards were further separated according to the grade level (6-8) in which they are taught. In addition to reporting the mean importance and competence and standard deviations of each of the standards in Table 2, t-tests were conducted to determine differences between the means of standard importance and student competence. All standards except for 8th grade "Identify the 3 main parts of the agricultural education program" were statistically significantly different, suggesting a discrepancy between what teachers perceive as important and student competence upon completion. The fact that this standard was not statistically significantly different between importance and competence is likely due to the fact that this standard is consistently taught in all three grade levels and by 8th grade students are proficient. Teachers perceived this standard as

important and students were competent upon completion and this contributed to a small discrepancy between the two and thus the means were not statistically significantly different. As reported in Table 2, the top five curriculum standards with the highest means in regards to perceived competency were 7th Grade "Express the importance of agriculture in daily life" (*M*=4.29, *SD*=0.68), 8th Grade "Develop an understanding of the FFA organization" (*M*=4.25, *SD*=0.85), 8th Grade "Identify the 3 main parts of the agricultural education program" (*M*=4.25, *SD*=0.68), 6th Grade "Students will state the importance of Georgia agriculture" (*M*=4.15, *SD*=0.74), and 6th Grade "Students will demonstrate the importance of agriculture in daily life" (*M*=4.15, *SD*=0.83).

Grand means were reported for each grade level based upon each curriculum standard within that grade level. As reported in Table 3, the grade level with the highest grand mean in regards to perceived competency of the curriculum standards was 7th grade (*M*=3.99, *SD*=0.59). Sixth grade reported a grand mean of 3.87 (*SD*=0.61) and eighth grade reported a grand mean of 3.87 (*SD*=0.64).

Table 2

Importance and Competency Ratings of Middle School Ag Ed Curriculum Standards as Perceived by Georgia Middle School Agricultural Education Teachers.

Grade	Curriculum Standard	Importance		Competency	
		M	*SD*	*M*	*SD*
6th Grade	Students will demonstrate the importance of agriculture in daily life.	4.74	0.53	4.15	0.83
	Students will express an understanding of the history of American agriculture.	3.75	1.02	3.49	0.92
	Students will state the importance of Georgia agriculture.	4.64	0.56	4.15	0.74
	Establish an understanding of Agricultural Education Programs.	4.39	0.81	3.94	0.96
	Express knowledge of the area of horticulture.	4.24	0.85	3.88	0.85
	Demonstrate an understanding of the area of animal science.	4.22	0.81	3.90	0.73
	Describe examples of career clusters in agriculture.	3.99	1.00	3.54	1.01
7th Grade	Express the importance of agriculture in daily life.	4.67	0.61	4.29	0.68
	Compare/contrast the importance of Georgia agriculture.	4.39	0.70	4.11	0.74
	Demonstrate an understanding of the National FFA Organization.	4.44	0.73	4.08	0.83
	Express an understanding of the area of agriscience.	3.93	0.97	3.69	0.96
	Build an understanding of the area of forestry & natural resources.	4.29	0.76	4.04	0.83
	Critique the area of agricultural mechanics.	4.11	0.99	3.74	1.02
8th Grade	Identify the 3 main parts of the agricultural education program.	4.40	0.90	4.25	0.85
	Develop an understanding of the FFA organization.	4.60	0.71	4.25	0.80
	Develop leadership skills, characteristics, and responsibilities.	4.67	0.75	4.04	0.90
	Develop and use verbal and nonverbal communication skills.	4.43	0.85	3.96	0.88
	Develop work ethic and employable skills through agricultural education and leadership programs.	4.49	0.86	3.90	0.94
	Students will define and explain the horticulture industry.	4.31	0.70	4.04	0.81
	Students will identify plant parts and their functions.	4.39	0.72	4.13	0.75
	Students will define methods of plant propagation either by sexual or asexual reproduction.	4.29	0.76	3.85	0.91
	Students will identify plant growth requirements.	4.40	0.74	4.10	0.81
	Students will define the forestry & natural resource industry.	4.29	0.76	3.99	0.78

Students will identify the importance of the forest.	4.22	0.86	3.88	0.79
Students will be able to classify and list examples of trees specific to our region.	4.07	0.98	3.64	0.94
Students will explain the importance of conservation and preservation of natural resources.	4.31	0.72	3.83	0.87
Student will be able to describe wildlife and their habitat.	4.28	0.83	3.94	0.95
The students will identify the role of agriscience in meeting human needs.	4.14	0.86	3.65	0.97
The student will identify current trends and issues relating to agriscience.	3.99	0.97	3.54	0.90
The student will demonstrate the application of agriscience in agricultural animal research and production.	3.99	0.96	3.51	1.06
The student will demonstrate the application of agriscience in agricultural plant research and production.	3.97	0.92	3.43	0.99
The student will identify various career clusters in the field of agriscience.	4.15	0.83	3.64	1.01

[1]Scale of 1= *Low Importance*; 5= *High Importance*
[2]Scale of 1= *Low Student Competence*; 5= *High Student Competence*

Table 3
Importance and Competency Grand Means of Middle School Ag Ed Curriculum Standards by Grade Level as Perceived by Georgia Middle School Agricultural Education Teachers.

Grade	Total Importance		Total Competency	
	M[1]	*SD*	*M*[2]	*SD*
6th Grade	4.28	0.50	3.87	0.61
7th Grade	4.31	0.52	3.99	0.59
8th Grade	4.28	0.57	3.87	0.64

[1]Scale of 1= *Low Importance;* 5= *High Importance*
[2]Scale of 1= *Low Student Competence*; 5= *High Student Competence*

Objective Four: Describe middle school agricultural education teacher's perceptions on how classroom/laboratory experiences, FFA experiences, and SAE experiences are related to a student's decision to enroll in a high school agricultural education course.

Teachers were asked to indicate their perceived level of influence that experiences in middle school agricultural education had upon a student's decision to continue enrollment as

they transitioned into high school. This section of the questionnaire was presented via a five-point Likert-type survey and based upon the experiences a middle school agricultural education student may have in each of the three components of the agricultural education program model. The experiences represented the three components of a complete agricultural education program and included classroom/laboratory, FFA, and SAE experiences. Teachers were asked to indicate perceived influence, which included negative influence, slightly negative influence, no influence, slightly positive influence, and positive influence. A positive influence indicated that the experience would make a student want to continue enrollment and a negative influence indicated that the experience would make a student not want to enroll in a high school course. Teachers were directed to mark no influence if they believe the experience did not have any influence upon a student's decision to enroll in a high school agricultural education course after middle school. Teachers were further asked to base their perception upon both their program and middle school agricultural education throughout the State of Georgia.

As reported in Table 4, teachers perceived "Hands-on learning" (*M*=4.82, *SD*=0.45) to have the greatest influence upon a student's secondary enrollment decision and "Learning about the history of American agriculture" (*M*=3.60, *SD*=0.88) as the lowest influence specifically as it pertains to classroom and laboratory experiences. This was followed by "Outdoor laboratory experience" (*M*=4.75, *SD*=0.58), "Educational experiences in the greenhouse" (*M*=4.68, *SD*=0.55), "Learning about the opportunities available in the FFA" (*M*=4.61, *SD*=0.55), and "Educational experiences in the school livestock facility" (*M*=4.61, *SD*=0.70) in the top five regarding classroom and laboratory experiences.

As reported in Table 4, teachers perceived "Being an FFA member" (*M*=4.90, *SD*=0.30) to have the greatest influence upon a student's secondary enrollment decision and "Participating

in FFA fundraising efforts" (*M*=4.07, *SD*=0.81) as the lowest influence specifically as it pertains to FFA experiences. This was followed by "Serving as a chapter officer" (*M*=4.88, *SD*=0.37), "Participating in leadership career development events" (*M*=4.78, *SD*= 0.45), "Participating in wildlife and natural resources career development events" (*M*=4.75, *SD*=0.47), and "Participating in animal science career development events" (*M*=4.75, *SD*=0.45) in the top five regarding FFA experiences.

As reported in Table 4, teachers perceived "Raising/exhibiting livestock" (*M*=4.68, *SD*=0.60) to have the greatest influence upon a student's secondary enrollment decision and "Learning record keeping skills through SAE program" (*M*=3.86, *SD*=0.95) as the lowest influence specifically as it pertains to SAE experiences. This was followed by "Receiving recognition for their SAE program" (*M*=4.61, *SD*=0.66), "Earning money through SAE program" (*M*=4.53, *SD*=0.67), "Hands-on learning through SAE program" (*M*=4.42, *SD*=0.75), and "Learning new skills through the completion of their SAE" (*M*=4.25, *SD*=0.73) in the top five regarding SAE experiences.

Table 4
Middle School Ag Ed Experiences and their Influence on Secondary Enrollment as Perceived by Middle School Ag Ed Teachers.

Ag Ed Program Areas	Program Experiences	Mean	SD
Classroom and Laboratory Instruction	Hands-on learning.	4.82	0.45
	Outdoor laboratory experiences.	4.75	0.58
	Educational experiences in the school greenhouse.	4.68	0.55
	Learning about the opportunities available in the FFA.	4.61	0.55
	Educational experiences in the school livestock facility.	4.61	0.70
	Learning about Animal Science.	4.54	0.58
	In-class laboratory experiences.	4.53	0.73
	Learning about the Horticulture industry.	4.36	0.70
	Learning about agricultural mechanics.	4.36	0.72
	Making connections between academics and real-world situations.	4.36	0.66
	Learning how agriculture affects/impacts life.	4.32	0.67

	Learning about forestry and natural resources.	4.31	0.64
	Learning about agriculture in Georgia.	4.28	0.72
	Learning about agricultural careers.	4.18	0.78
	Learning about plant science.	4.17	0.69
	Learning about leadership and communication.	4.07	0.84
	Learning about agriscience.	4.06	0.75
	Learning about work ethic and employability skills.	3.92	0.87
	Learning about the history of American agriculture.	3.60	0.88
FFA	Being an FFA member.	4.90	0.30
	Serving as a chapter officer.	4.88	0.37
	Participating in leadership career development events.	4.78	0.45
	Participating in animal science career development events.	4.75	0.50
	Participating in wildlife and natural resources career development events.	4.75	0.47
	Participating in plant science career development events.	4.72	0.51
	Attending summer leadership conference (FFA Camp).	4.72	0.61
	Attending FFA Conventions (State or National).	4.68	0.53
	Participating in agricultural mechanics career development events.	4.67	0.69
	Attending FFA Conferences (Ex. Discovery Conference).	4.61	0.59
	Attending chapter FFA meetings.	4.56	0.55
	Local FFA chapter socials.	4.49	0.60
	FFA sponsored community service projects.	4.35	0.67
	Earning Discovery FFA Degree.	4.22	0.72
	Participating in FFA fundraising efforts.	4.07	0.81
SAE	Raising/exhibiting livestock.	4.68	0.60
	Receiving recognition for their SAE program.	4.61	0.66
	Earning money through SAE program.	4.53	0.67
	Hands-on learning through SAE program.	4.42	0.75
	Student's ability to make real-world connections through their SAE.	4.25	0.76
	Learning new skills through the completion of their SAE.	4.25	0.73
	Learning about various areas of agriculture that they find interesting through their SAE.	4.15	0.78
	Learning to set goals through the completion of their SAE.	4.00	0.84
	The student's supervised agricultural experience program (SAE).	3.99	0.97
	Agriscience SAE programs.	3.99	0.76
	Learning record keeping skills through SAE program.	3.86	0.95

N=72. Scale: 1= *Negative*, 2= *Slightly Negative*, 3= *No Influence*, 4= *Slightly Positive*, 5= *Positive*

The top ten experiences in middle school agricultural education that teachers perceived to have the greatest influence upon a student's secondary enrollment decision are reported in Table 5. All three components of agricultural education were represented in the top ten experiences with four experiences from classroom and laboratory, four from FFA, and two from SAE. FFA experiences represented four out of the top five most influential experiences and represented the most influential experience "Being an FFA member" (*M*=4.90, *SD*=0.30).

Table 5
Top Ten Middle School Ag Ed Experiences and their Influence on Secondary Enrollment as Perceived by Middle School Ag Ed Teachers.

Top Ten Ag Ed Experiences	*M*	*SD*
1. Being an FFA member.	4.90	0.30
2. Serving as a chapter officer.	4.88	0.37
3. Hands-on learning.	4.82	0.45
4. Participating in leadership career development events.	4.78	0.45
5. Participating in animal science career development events.	4.75	0.50
6. Outdoor laboratory experiences.	4.75	0.58
7. Educational experiences in the school greenhouse.	4.68	0.55
8. Raising/exhibiting livestock.	4.68	0.60
9. Learning about the opportunities available in the FFA.	4.61	0.55
10. Receiving recognition for their SAE program.	4.61	0.66

N=72. Scale: 1= *Negative*, 2= *Slightly Negative*, 3= *No Influence*, 4= *Slightly Positive*, 5= *Positive*

Analysis of variance was used to determine if there were any statistically significant differences between the means of the three components of agricultural education (classroom/laboratory instruction, FFA, and SAE). The within-subjects ANOVA indicated that there are statistically significant differences between the means of at least two of the groups. Paired t-tests (Table 6) were conducted to determine which components were statistically significantly different from one another.

Grand means for each component of agricultural education are reported in Table 6. Among the three components of middle school agricultural education, FFA experiences (*M*=4.61, *SD*=0.36) were perceived by teachers to have the greatest influence upon a student's

secondary enrolment decision followed by classroom and laboratory experiences (*M*=4.34, *SD*=0.44) and SAE experiences (*M*=4.25, *SD*=0.63). In Table 6, n represented the number of experiences in the questionnaire for each component of agricultural education. Paired samples t-tests were conducted to determine differences between combinations of groups (areas of agricultural education) based upon the results of the within-subjects ANOVA, which indicated a significant difference. Significant differences between groups were reported in Table 6. FFA experiences were significantly different between all combinations of groups (FFA/Classroom and Laboratory; $p<.01$, $p=0.000$) (FFA/SAE; $p<.01$, $p=.000$), while classroom/laboratory experiences and SAE experiences were not significantly different. FFA experiences were significantly different from each of the other two variables, which was indicated in significance column of Table 6.

Table 6
Grand Means and Significant Difference of Middle School Ag Ed Experiences and their Influence on Secondary Enrollment as Perceived by Middle School Ag Ed Teachers.

Ag Ed Program Areas	*n*	*M*	*SD*	Sig.
Overall Classroom and Laboratory Instruction	19	4.34	0.44	
Overall FFA	15	4.61	0.36	*
Overall SAE	11	4.25	0.63	

Scale: 1= *Negative*, 2= *Slightly Negative*, 3= *No Influence*, 4= *Slightly Positive*, 5= *Positive.*
* Represents significant differences according to t-test results between all combinations of groups.

Teachers were also asked to indicate the overall level of influence they perceived middle school agricultural education as a whole has on a student's secondary enrollment decision. Teachers were asked to indicate their perceived level of influence using a scale from zero to ten, where zero indicates no influence, one indicates less influence, and ten indicates more influence. As reported in Table 7, teachers indicated an overall influence of 8.11 out of 10 with a standard deviation of 1.49.

Table 7
Overall Influence of Middle School Ag Ed and It's Influence on a Student's Secondary Enrollment Decision as Perceived by Middle School Ag Ed Teachers.

All Ag Ed Program Areas	*M*	*SD*
Overall Influence on Secondary Enrollment	8.11	1.49

N=72. Scale: 1= *Less Influence* through 10= *More Influence* (0= *No Influence)*

Objective Five: Determine the mean weighted discrepancy score by the teacher's perception of importance of the curriculum standard and the teacher's perception of student competence on the standard.

The discrepancy between teacher perceived importance of each curriculum standard (by grade level) and student competency upon completion of that standard is represented by the mean weighted discrepancy score (MWDS). The top three highest discrepancy scores for sixth grade as reported in Table 8 were "Students will demonstrate the importance of agriculture in daily life" (MWDS=2.76), "Students will state the importance of Georgia agriculture" (MWDS=2.26), and "Establish an understanding of Agricultural Education Programs" (MWDS=1.95). The sixth grade curriculum standard with the lowest MWDS was "Students will express an understanding of the history of American Agriculture" (MWDS=0.99).

The top three highest discrepancy scores for seventh grade as reported in Table 8 were "Express the importance of agriculture in daily life" (MWDS=1.75), "Demonstrate an understanding of the National FFA Organization" (MWDS=1.60), and "Critique the area of agricultural mechanics" (MWDS=1.54). The seventh grade curriculum standard with the lowest MWDS was "Express an understanding of the area of agriscience" (MWDS=0.93).

The top three highest discrepancy scores for eighth grade as reported in Table 8 were "Develop leadership skills, characteristics, and responsibilities" (MWDS=2.92), "Develop work ethic and employable skills through agricultural education and leadership programs"

(MWDS=2.62), and "The student will demonstrate the application of agriscience in agricultural plant research and production" (MWDS=2.15). The eighth grade curriculum standard with the lowest MWDS was "Identify the three main parts of the agricultural education program" (MWDS=0.67).

Table 8
Mean Weighted Discrepancy Scores by Grade Level and Curriculum Standard.

Grade	Curriculum Standards	MWDS[1]
6th	Students will demonstrate the importance of agriculture in daily life.	2.76
	Students will state the importance of Georgia agriculture.	2.26
	Establish an understanding of Agricultural Education Programs.	1.95
	Describe examples of career clusters in agriculture.	1.77
	Express knowledge of the area of horticulture.	1.53
	Demonstrate an understanding of the area of animal science.	1.35
	Students will express an understanding of the history of American agriculture.	0.99
7th	Express the importance of agriculture in daily life.	1.75
	Demonstrate an understanding of the National FFA Organization.	1.60
	Critique the area of agricultural mechanics.	1.54
	Compare/contrast the importance of Georgia agriculture.	1.22
	Build an understanding of the area of forestry & natural resources.	1.07
	Express an understanding of the area of agriscience.	0.93
8th	Develop leadership skills, characteristics, and responsibilities.	2.92
	Develop work ethic and employable skills through agricultural education and leadership programs.	2.62
	The student will demonstrate the application of agriscience in agricultural plant research and production.	2.15
	The student will identify various career clusters in the field of agriscience.	2.13
	Develop and use verbal and nonverbal communication skills.	2.09
	Students will explain the importance of conservation and preservation of natural resources.	2.03
	The students will identify the role of agriscience in meeting human needs.	2.01
	Students will define methods of plant propagation either by sexual or asexual reproduction.	1.91
	The student will demonstrate the application of agriscience in agricultural animal research and production.	1.88

The student will identify current trends and issues relating to agriscience.	1.77
Students will be able to classify and list examples of trees specific to our region.	1.75
Develop an understanding of the FFA organization.	1.60
Students will identify the importance of the forest.	1.47
Student will be able to describe wildlife and their habitat.	1.43
Students will identify plant growth requirements.	1.35
Students will define the forestry & natural resource industry.	1.31
Students will identify plant parts and their functions.	1.16
Students will define and explain the horticulture industry.	1.14
Identify the 3 main parts of the agricultural education program.	0.67

[1]Mean Weighted Discrepancy Score

The middle school agricultural education curriculum standards are ranked by priority in Table 9. This table reports the top ten curriculum standards with the highest mean weighted discrepancy scores. The curriculum standard with the highest MWDS is eighth grade: "Develop leadership skills, characteristics, and responsibilities" (MWDS=2.92) followed by sixth grade: "Students will demonstrate the importance of agriculture in daily life" (MWDS=2.76), eighth grade: "Develop work ethic and employable skills through agricultural education and leadership programs" (MWDS=2.62), sixth grade: "Students will state the importance of Georgia agriculture" (MWDS=2.26), and eighth grade: "The student will demonstrate the application of agriscience in agricultural plant research and production" (MWDS=2.15) in the top five. Among the top ten curriculum standards with the highest MWDS, eighth grade was represented seven times, sixth grade was represented three times, and seventh grade was not represented in the top ten. Eighth grade also had the highest MWDS (MWDS=2.92) among all curriculum standards from each grade with a MWDS that was 0.16 higher than any other standard.

Table 9
Top Ten Mean Weighted Discrepancy Scores From All Curriculum Standards (Grade 6-8).

Grade	Curriculum Standards	Rank	MWDS[1]
8th	Develop leadership skills, characteristics, and responsibilities.	1	2.92
6th	Students will demonstrate the importance of agriculture in daily life.	2	2.76
8th	Develop work ethic and employable skills through agricultural education and leadership programs.	3	2.62
6th	Students will state the importance of Georgia agriculture.	4	2.26
8th	The student will demonstrate the application of agriscience in agricultural plant research and production.	5	2.15
8th	The student will identify various career clusters in the field of agriscience.	6	2.13
8th	Develop and use verbal and nonverbal communication skills.	7	2.09
8th	Students will explain the importance of conservation and preservation of natural resources.	8	2.03
8th	The students will identify the role of agriscience in meeting human needs.	9	2.01
6th	Establish an understanding of Agricultural Education Programs.	10	1.95

[1]Mean Weighted Discrepancy Score

Table 10 reports the average MWDS among all participants by grade level including every curriculum standard within each grade. Sixth grade had the highest average MWDS (Average MWDS=1.80), followed by eighth grade (Average MWDS=1.76), and seventh grade (Average MWDS=1.35). The average MWDS for sixth and eighth grade were relatively close being separated by 0.04, while seventh grade was lower than eighth by 0.41 and sixth by 0.45.

Table 10
Average MWDS by Grade Level.

Grade	Average MWDS[1]
6th	1.80
7th	1.35
8th	1.76

[1]Mean Weighted Discrepancy Score

Objective Six: Describe mean weighted discrepancy scores by teacher's personal characteristics.

Mean weighted discrepancy scores for each curriculum standard separated by gender are reported in Table 11. The curriculum standard with the highest MWDS in sixth grade for both males and females was "Students will demonstrate the importance of agriculture in daily life" (Male MWDS=2.60; Female MWDS=2.89). The curriculum standards with the lowest MWDS in sixth grade were: Males: "Students will express an understanding of the history of American agriculture" (MWDS=1.45), Females: "Demonstrate an understanding of the area of animal science" (MWDS=0.62).

The curriculum standards with the highest MWDS in seventh grade were: Males: "Demonstrate an understanding of the National FFA Organization" (MWDS=1.72), Females: "Express the importance of agriculture in daily life" (MWDS=2.05). The curriculum standards with the lowest MWDS in seventh grade were: Males: "Express an understanding of the area of agriscience" (MWDS=0.51), Females: "Build an understanding of the area of forestry and natural resources" (MWDS=0.84).

The curriculum standard with the highest MWDS in eighth grade for both males and females was "Develop leadership skills, characteristics, and responsibilities" (Male MWDS=2.86, Female MWDS=2.96). The curriculum standard with the lowest MWDS in eighth grade for both males and females was "Identify the three main parts of the agricultural education program" (Male MWDS=0.57, Female MWDS=0.75).

Table 11
Mean Weighted Discrepancy Scores for Each Curriculum Standard Separated by Gender.

Grade	Curriculum Standards	MWDS[1] Male	MWDS[1] Female
6th	Students will demonstrate the importance of agriculture in daily life.	2.60	2.89
	Students will express an understanding of the history of American agriculture.	1.45	0.64
	Students will state the importance of Georgia agriculture.	1.95	2.49
	Establish an understanding of Agricultural Education Programs.	1.84	2.03
	Express knowledge of the area of horticulture.	2.32	0.93
	Demonstrate an understanding of the area of animal science.	2.32	0.62
	Describe examples of career clusters in agriculture.	1.93	1.65
7th	Express the importance of agriculture in daily life.	1.35	2.05
	Compare/contrast the importance of Georgia agriculture.	0.99	1.39
	Demonstrate an understanding of the National FFA Organization.	1.72	1.52
	Express an understanding of the area of agriscience.	0.51	1.25
	Build an understanding of the area of forestry & natural resources.	1.38	0.84
	Critique the area of agricultural mechanics.	2.12	1.10
8th	Identify the 3 main parts of the agricultural education program.	0.57	0.75
	Develop an understanding of the FFA organization.	1.78	1.46
	Develop leadership skills, characteristics, and responsibilities.	2.86	2.96
	Develop and use verbal and nonverbal communication skills.	1.86	2.27
	Develop work ethic and employable skills through agricultural education and leadership programs.	2.60	2.63
	Students will define and explain the horticulture industry.	0.97	1.26
	Students will identify plant parts and their functions.	1.27	1.07
	Students will define methods of plant propagation either by sexual or asexual reproduction.	2.22	1.67
	Students will identify plant growth requirements.	1.70	1.07
	Students will define the forestry & natural resource industry.	1.52	1.15
	Students will identify the importance of the forest.	1.63	1.34
	Students will be able to classify and list examples of trees specific to our region.	1.71	1.79

Students will explain the importance of conservation and preservation of natural resources.	2.08	2.00
Student will be able to describe wildlife and their habitat.	1.52	1.36
The students will identify the role of agriscience in meeting human needs.	2.54	1.62
The student will identify current trends and issues relating to agriscience.	1.80	1.75
The student will demonstrate the application of agriscience in agricultural animal research and production.	2.31	1.56
The student will demonstrate the application of agriscience in agricultural plant research and production.	2.43	1.94
The student will identify various career clusters in the field of agriscience.	2.01	2.23

[1]Mean Weighted Discrepancy Score

Table 12 reports the average MWDS for the curriculum standards in each grade level separated by gender. Male and female participants were relatively close in average MWDS for seventh grade, however females had lower MWDS than males in both sixth and eighth grade curriculum standards. The highest average MWDS for males was in the sixth grade curriculum standards (MWDS=2.06), followed by eighth grade (MWDS=1.86) and seventh grade (MWDS=1.35). The highest average MWDS for females was in the eighth grade curriculum standards (MWDS=1.68), followed by sixth grade (MWDS=1.61) and seventh grade (MWDS=1.36).

Table 12
Average Mean Weighted Discrepancy Scores for All Curriculum Standards Separated by Gender.

Grade	Average MWDS[1] Male	Average MWDS[1] Female
6th	2.06	1.61
7th	1.35	1.36
8th	1.86	1.68

[1]Mean Weighted Discrepancy Score

Mean weighted discrepancy scores for each curriculum standard separated by years of teaching experience are reported in Table 13. The curriculum standards with the highest MWDS for sixth grade were: Less than 5 years: “Students will demonstrate the importance of agriculture in daily life” (MWDS=2.90), 5-10 years: “Students will state the importance of Georgia agriculture” (MWDS=3.64), 11-15 years: “Students will demonstrate the importance of agriculture in daily life” (MWDS=1.58), and more than 15 years: “Describe examples of career clusters in agriculture” (MWDS=3.32).

The curriculum standards with the highest MWDS for seventh grade were: Less than 5 years: “Critique the area of agricultural mechanics” (MWDS=1.33), 5-10 years: “Express the importance of agriculture in daily life” (MWDS=4.00), 11-15 years: “Critique the area of agricultural mechanics” (MWDS=1.64), and more than 15 years: “Express the importance of agriculture in daily life” (MWDS=1.94).

The curriculum standards with the highest MWDS for seventh grade Less than 5 years: “Develop leadership skills, characteristics, and responsibilities” (MWDS=2.56), 5-10 years: “Develop work ethic and employable skills through agricultural education and leadership programs” (MWDS=4.81), 11-15 years: “Develop leadership skills, characteristics, and responsibilities” (MWDS=2.18), and more than 15 years: “Develop leadership skills, characteristics, and responsibilities” (MWDS=3.11). Teachers with 11-15 years of teaching experience typically had the lowest MWDS and even had several curriculum standards with negative MWDS. Negative MWDS occur when teachers indicate a greater level of student competence than importance for an individual standard. This means that teachers perceive students to be competent regarding a curriculum standard and this competence exceeds the importance rating for that same standard.

Table 13

Mean Weighted Discrepancy Scores for Each Curriculum Standard Separated by Years of Teaching.

Grade	Curriculum Standards	MWDS[1] Less than 5 Years	MWDS[1] 5-10 Years	MWDS[1] 11-15 Years	MWDS[1] More than 15 Years
6th	Students will demonstrate the importance of agriculture in daily life.	2.90	3.38	1.58	3.16
	Students will express an understanding of the history of American agriculture.	1.33	1.88	-0.50	0.94
	Students will state the importance of Georgia agriculture.	2.09	3.64	1.24	2.32
	Establish an understanding of Agricultural Education Programs.	1.84	3.45	0.88	1.83
	Express knowledge of the area of horticulture.	1.50	3.33	0.00	1.41
	Demonstrate an understanding of the area of animal science.	0.95	3.02	1.13	0.70
	Describe examples of career clusters in agriculture.	1.03	2.85	1.06	3.32
7th	Express the importance of agriculture in daily life.	1.20	4.00	0.62	1.94
	Compare/contrast the importance of Georgia agriculture.	1.13	2.51	-0.29	1.83
	Demonstrate an understanding of the National FFA Organization.	1.29	3.17	0.89	1.48
	Express an understanding of the area of agriscience.	0.13	2.81	0.26	1.64
	Build an understanding of the area of forestry & natural resources.	0.42	3.37	0.29	1.07
	Critique the area of agricultural mechanics.	1.33	2.94	1.64	0.34
8th	Identify the 3 main parts of the agricultural education program.	0.57	1.89	0.29	0.00
	Develop an understanding of the FFA organization.	1.78	2.96	0.61	0.77
	Develop leadership skills, characteristics, and responsibilities.	2.56	4.33	2.18	3.11
	Develop and use verbal and nonverbal communication skills.	1.43	3.48	1.48	2.95
	Develop work ethic and employable skills through agricultural education and leadership programs.	1.88	4.81	1.79	2.99
	Students will define and explain the horticulture industry.	0.83	2.15	0.29	1.79
	Students will identify plant parts and their functions.	0.71	2.51	0.88	1.10
	Students will define methods of plant propagation either by sexual or asexual reproduction.	1.94	2.45	0.86	2.50

Students will identify plant growth requirements.	0.71	2.83	0.88	1.83
Students will define the forestry & natural resource industry.	0.69	3.37	0.29	1.79
Students will identify the importance of the forest.	0.41	3.32	1.13	2.46
Students will be able to classify and list examples of trees specific to our region.	1.18	2.91	1.63	2.03
Students will explain the importance of conservation and preservation of natural resources.	1.53	3.69	1.44	2.15
Student will be able to describe wildlife and their habitat.	1.24	3.06	0.86	0.71
The students will identify the role of agriscience in meeting human needs.	1.74	3.84	0.00	3.10
The student will identify current trends and issues relating to agriscience.	1.54	2.56	1.06	2.33
The student will demonstrate the application of agriscience in agricultural animal research and production.	1.54	2.85	0.80	2.99
The student will demonstrate the application of agriscience in agricultural plant research and production.	2.43	2.55	0.79	2.65
The student will identify various career clusters in the field of agriscience.	1.34	3.86	2.21	2.08

[1]Mean Weighted Discrepancy Score

Table 14 reports the average MWDS for the curriculum standards in each grade level separated by years of teaching experience. Teachers with 5-10 years of teaching experience had the highest MWDS for curriculum standards in all grades, while teachers with 11-15 years of teaching experience had the lowest MWDS for curriculum standards in all grades. The highest MWDS for teachers with less than 5 years of teaching experience was 6th grade (MWDS=1.66), followed by 8th grade (MWDS=1.37) and 7th grade (MWDS=0.92). The highest MWDS for teachers with 5-10 years of teaching experience was 8th and 7th grade as both had the same MWDS of 3.13, followed by 6th grade (MWDS=3.08). The highest MWDS for teachers with 11-15 years of teaching experience was 8th grade (MWDS=1.02), followed by 6th grade (MWDS=0.77) and 7th grade (MWDS=0.57). The highest MWDS for teachers with more than 15

years of teaching experience was 8th grade (MWDS=2.07), followed by 6th grade (MWDS=1.95) and 7th grade (MWDS=1.38).

Table 14
Average Mean Weighted Discrepancy Scores for All Curriculum Standards Separated by Years of Teaching Experience.

Grade	MWDS[1] Less than 5 Years	MWDS[1] 5-10 Years	MWDS[1] 11-15 Years	MWDS[1] More than 15 Years
6th	1.66	3.08	0.77	1.95
7th	0.92	3.13	0.57	1.38
8th	1.37	3.13	1.02	2.07

[1]Mean Weighted Discrepancy Score

Mean weighted discrepancy scores for each curriculum standard separated by region are reported in Table 15. The curriculum standards with the highest MWDS for sixth grade were: North Region: "Students will demonstrate the importance of agriculture in daily life" (MWDS=3.16), Central Region: "Students will demonstrate the importance of agriculture in daily life" (MWDS=3.66), and South Region: "Describe examples of career clusters in agriculture" (MWDS=1.99).

The highest MWDS for seventh grade were: North Region: "Critique the area of agricultural mechanics" (MWDS=2.19), Central Region: "Express the importance of agriculture in daily life" (MWDS=1.06), and South Region: "Express the importance of agriculture in daily life" (MWDS=1.87).

The highest MWDS for eighth grade were: North Region: "Develop leadership skills, characteristics, and responsibilities" (MWDS=4.04), Central Region: "The student will demonstrate the application of agriscience in agricultural animal research and production" (MWDS=1.81), and South Region: "Develop work ethic and employable skills through agricultural education and leadership programs" (MWDS=2.92).

Table 15
Mean Weighted Discrepancy Scores for Each Curriculum Standard Separated by Region.

Grade	Curriculum Standards	MWDS[1] North	MWDS[1] Central	MWDS[1] South
6th	Students will demonstrate the importance of agriculture in daily life.	3.16	3.66	1.18
	Students will express an understanding of the history of American agriculture.	1.50	1.19	0.00
	Students will state the importance of Georgia agriculture.	2.47	2.32	1.86
	Establish an understanding of Agricultural Education Programs.	2.19	2.19	1.32
	Express knowledge of the area of horticulture.	1.41	2.31	0.85
	Demonstrate an understanding of the area of animal science.	0.70	1.73	1.90
	Describe examples of career clusters in agriculture.	1.20	2.36	1.99
7th	Express the importance of agriculture in daily life.	2.18	1.06	1.87
	Compare/contrast the importance of Georgia agriculture.	1.90	0.00	1.54
	Demonstrate an understanding of the National FFA Organization.	1.93	1.01	1.78
	Express an understanding of the area of agriscience.	0.92	0.71	1.18
	Build an understanding of the area of forestry & natural resources.	0.86	0.98	1.50
	Critique the area of agricultural mechanics.	2.19	0.93	1.23
8th	Identify the 3 main parts of the agricultural education program.	1.17	-0.20	0.88
	Develop an understanding of the FFA organization.	1.84	1.67	1.15
	Develop leadership skills, characteristics, and responsibilities.	4.04	1.70	2.57
	Develop and use verbal and nonverbal communication skills.	2.36	1.21	2.66
	Develop work ethic and employable skills through agricultural education and leadership programs.	3.14	1.63	2.92
	Students will define and explain the horticulture industry.	1.00	0.98	1.51
	Students will identify plant parts and their functions.	1.32	0.60	1.54
	Students will define methods of plant propagation either by sexual or asexual reproduction.	2.00	1.76	1.93
	Students will identify plant growth requirements.	1.76	0.40	1.76
	Students will define the forestry & natural resource industry.	1.14	0.78	2.15
	Students will identify the importance of the forest.	1.83	0.00	2.53
	Students will be able to classify and list examples of trees specific to our region.	2.03	0.74	2.44
	Students will explain the importance of conservation and preservation of natural resources.	2.30	0.98	2.80

Student will be able to describe wildlife and their habitat.	1.85	0.58	1.71
The students will identify the role of agriscience in meeting human needs.	1.79	1.69	2.69
The student will identify current trends and issues relating to agriscience.	2.13	1.09	1.99
The student will demonstrate the application of agriscience in agricultural animal research and production.	1.73	1.81	2.19
The student will demonstrate the application of agriscience in agricultural plant research and production.	2.52	1.63	2.18
The student will identify various career clusters in the field of agriscience.	2.49	0.94	2.91

[1]Mean Weighted Discrepancy Score

Table 16 reports the average MWDS for the curriculum standards in each grade level separated by region. Central region had both the highest MWDS (6th Grade: 2.25) and the lowest MWDS (7th Grade: 0.78). Beyond those two extremes, the MWDS from each region and grade level were relatively evenly distributed. The highest MWDS for teachers from the north region was 8th grade (MWDS=2.02), followed by 6th grade (MWDS=1.81), and 7th grade (MWDS=1.60). The highest MWDS for teachers from the central region was 6th grade (MWDS=2.25), followed by 8th grade (MWDS=1.05), and 7th grade (MWDS=0.78). The highest MWDS for teachers from the south region was 8th grade (MWDS=2.13), followed by 7th grade (MWDS=1.52), and 6th grade (MWDS=1.30).

Table 16
Average Mean Weighted Discrepancy Scores for All Curriculum Standards Separated by Region.

Grade	MWDS[1] North	MWDS[1] Central	MWDS[1] South
6th	1.81	2.25	1.30
7th	1.60	0.78	1.52
8th	2.02	1.05	2.13

[1]Mean Weighted Discrepancy Score

The regressions for the 6th grade standards reported in Table 17 reveal multiple insignificant findings based on teacher characteristics, however marginally significant coefficients are depicted in reference to region in standard 1, as well as years of teaching in standards 5, 6, and 7. Significant at $p<.10$ and holding all else constant, teachers in the Southern region of Georgia, compared with those in the Northern region, reported lower mean weighted discrepancy scores by approximately 2.05 units (MWDS). This means that when multiplied by the mean importance of standard 1, competency was revealed to be higher than importance according to a Likert scale. Also marginally significant at $p<.10$, those with teaching experience of 5-10 years in standards 5 and 6, compared to those who have taught for less than five years, reported higher mean weighted discrepancy scores by approximately 1.965 units (MWDS) and 2.002 units (MWDS), respectively. Findings for standard 7 also show that those who have taught for more than 15 years, compared to those who have taught for fewer than 5 years, reported mean weighted discrepancy scores approximately 2.33 units (MWDS) higher at $p<.10$.

These results reveal a pattern across multiple standards in which those who have taught longer were more likely to report marginally significant, positive mean weighted discrepancy scores. This reveals that the teachers find these objectives more important than they view their students' competence upon completion. Males also reported a higher mean weighted discrepancy score by 1.69 units (MWDS) than their female counterparts in reference to standard 6; this finding was significant at $p<.05$, suggesting that males viewed standard 6 to be more important than their students were competent upon completion. The regression for standard 5 accounted for the highest amount of variance with an R^2 of 0.16.

Table 17
Regression Models for MWDS of 6th Grade.

	Standard 1	Standard 2	Standard 3	Standard 4	Standard 5	Standard 6	Standard 7
Male	-0.434	0.793	-0.579	-0.237	1.300	1.685*	0.101
	(0.965)	(0.982)	(0.865)	(0.926)	(0.790)	(0.804)	(0.904)
Five to Ten	0.789	0.674	1.628	1.730	1.965+	2.002+	1.842
	(1.306)	(1.329)	(1.171)	(1.254)	(1.069)	(1.088)	(1.224)
Eleven to Fifteen	-1.024	-1.824	-0.857	-0.897	-1.265	0.319	0.249
	(1.295)	(1.318)	(1.161)	(1.243)	(1.060)	(1.079)	(1.214)
More than Fifteen	0.358	-0.457	0.275	0.024	-0.150	-0.363	2.329+
	(1.373)	(1.397)	(1.231)	(1.318)	(1.124)	(1.144)	(1.287)
Central	0.348	-0.710	-0.276	-0.160	0.519	0.886	1.130
	(1.155)	(1.175)	(1.035)	(1.109)	(0.946)	(0.962)	(1.083)
South	-2.050+	-1.594	-0.764	-1.036	-0.752	1.029	0.687
	(1.167)	(1.188)	(1.046)	(1.121)	(0.955)	(0.972)	(1.094)
Sample Size	72	72	72	72	72	72	72
R^2	0.09	0.08	0.06	0.06	0.16	0.14	0.09

Standard errors in parentheses
+ $p<.10$, * $p<.05$, ** $p<.01$, *** $p<.001$

Standard 1: Students will demonstrate the importance of agriculture in daily life.
Standard 2: Students will express an understanding of the history of American agriculture.
Standard 3: Students will state the importance of Georgia agriculture.
Standard 4: Establish an understanding of Agricultural Education Programs.
Standard 5: Express knowledge of the area of horticulture.
Standard 6: Demonstrate an understanding of the area of animal science.
Standard 7: Describe examples of career clusters in agriculture.

Similar to the regressions represented by 6th grade agriculture teachers, the regressions for 7th grade teachers (Table 18) revealed comparable patterns of significance, with many teacher characteristics remaining insignificant across multiple standards but years of teaching experience often reflecting significant findings. Specifically, those who taught for 5-10 years, compared to those who have taught less than five years, holding all else constant, reported overall higher mean weighted discrepancy scores in standard 1 (2.75 MWDS units; $p<.01$), standard 4 (2.66 MWDS units; $p<.05$), and standard 5 (2.90 MWDS units; $p<.05$), revealing similar findings to multiple standards for 6th grade teachers. However, teachers who had 11-15 years of experience reported lower mean weighted discrepancy scores than their counterparts with less than five years of experience in reference to standard 2 (-1.95 MWDS units; $p<.05$), which suggests that those teachers viewed their students as being more competent than the standard is important. In response to Likert items about standard 2, another significant finding is shown in reference to region, with teachers in central Georgia reporting statistically significantly lower mean weighted discrepancy scores than their counterparts in northern Georgia (-2.42 MWDS units; $p<.01$). The regression for standard 2 accounted for the highest amount of variance, with an R^2 of .21.

Table 18
Regression Models for MWDS of 7th Grade.

	Standard 1	Standard 2	Standard 3	Standard 4	Standard 5	Standard 6
Male	-0.657	-0.301	0.267	-0.789	0.535	1.157
	(0.693)	(0.661)	(0.718)	(0.833)	(0.825)	(0.909)
Five to Ten	2.746**	1.215	1.812+	2.661*	2.896*	1.607
	(0.938)	(0.895)	(0.971)	(1.128)	(1.117)	(1.230)
Eleven to Fifteen	-0.855	-1.947*	-0.638	0.068	-0.168	0.115
	(0.930)	(0.887)	(0.963)	(1.118)	(1.107)	(1.219)
More than Fifteen	0.739	0.612	0.119	1.564	0.604	-1.123
	(0.986)	(0.941)	(1.021)	(1.186)	(1.174)	(1.293)
Central	-1.255	-2.242**	-1.084	-0.176	-0.019	-1.361
	(0.830)	(0.792)	(0.859)	(0.997)	(0.988)	(1.088)
South	-0.542	-0.489	-0.308	0.067	0.410	-1.110
	(0.838)	(0.800)	(0.868)	(1.008)	(0.998)	(1.099)
Sample Size	72	72	72	72	72	72
R^2	0.19	0.21	0.09	0.11	0.12	0.09

Standard errors in parentheses
+ $p<.10$, * $p<.05$, ** $p<.01$, *** $p<.001$

Standard 1. Express the importance of agriculture in daily life.
Standard 2. Compare/contrast the importance of Georgia agriculture.
Standard 3. Demonstrate an understanding of the National FFA Organization.
Standard 4. Express an understanding of the area of agriscience.
Standard 5. Build an understanding of the area of forestry & natural resources.
Standard 6. Critique the area of agricultural mechanics.

Regressions for 8th grade standards (Table 19) depicted similar findings to those of 6th and 7th grade standards, suggesting that in several areas, teachers who had taught for 5-10 years, as well as those who taught for more than 15 years, reported higher mean weighted discrepancy scores than their counterparts who had taught for fewer than 5 years. Also, teachers who had taught for 11-15 years reported lower mean weighted discrepancy scores, as did teachers in the central region of Georgia, compared to those in the northern region and holding all else constant. Specifically, positive marginal significance ($p<.10$) was reported in standard 7 (1.71 MWDS units), standard 9 (1.98 MWDS units), standard 13 (1.97 MWDS units), standard 15 (1.95 MWDS units), and standard 19 (2.33 MWDS units) for teachers who taught for 5 -10 years, compared to those who had less than 5 years of teaching experience.

Of greater significance, teachers who had 5 -10 years of teaching experience reported higher mean weighted discrepancy scores in standard 5 (2.82 MWDS units; $p<.05$), standard 10 (2.51 MWDS units; $p<.01$), and standard 11 (2.64 MWDS units; $p<.05$). Overall, these findings indicate the perception that standards were more important than students were competent among teachers who had 5-10 years of experience. Teachers who had more than 15 years of experience shared this view in reference to standard 11, with marginal positively significant findings (1.91 MWDS units; $p<.10$). Teachers with 11-15 years of experience, compared to those with fewer than five years of experience, reported marginally negative significant findings at $p<.10$ in standards 15 and 18, with regressions showing coefficients of -1.94 MWDS units and -1.92 MWDS units, respectively. Also consistent with previous findings, teachers in the central region of Georgia, compared to those in the northern region, reported negative mean weighted discrepancy scores in standard 3 (-2.53 MWDS units; $p<.10$) and standard 11 (-1.91 MWDS units; $p<.05$). These negative coefficients presented by teachers in the central region and those

with 11-15 years of teaching experience indicate a higher perception of student competence than importance in these respective standards. With the highest number of significant factors, standard 11 accounted for the highest amount of variance, with an R^2 of .20.

Standard 1. Identify the 3 main parts of the agricultural education program.
Standard 2. Develop an understanding of the FFA organization.
Standard 3. Develop leadership skills, characteristics, and responsibilities.
Standard 4. Develop and use verbal and nonverbal communication skills.
Standard 5. Develop work ethic and employable skills through agricultural education and leadership programs.
Standard 6. Students will define and explain the horticulture industry.
Standard 7. Students will identify plant parts and their functions.
Standard 8. Students will define methods of plant propagation either by sexual or asexual reproduction.
Standard 9. Students will identify plant growth requirements.
Standard 10. Students will define the forestry & natural resource industry.
Standard 11. Students will identify the importance of the forest.
Standard 12. Students will be able to classify and list examples of trees specific to our region.
Standard 13. Students will explain the importance of conservation and preservation of natural resources.
Standard 14. Student will be able to describe wildlife and their habitat.
Standard 15. The students will identify the role of agriscience in meeting human needs.
Standard 16. The student will identify current trends and issues relating to agriscience.
Standard 17. The student will demonstrate the application of agriscience in agricultural animal research and production.
Standard 18. The student will demonstrate the application of agriscience in agricultural plant research and production.
Standard 19. The student will identify various career clusters in the field of agriscience.

Table 19
Regression Models for MWDS of 8th Grade.

	Standard 1	Standard 2	Standard 3	Standard 4	Standard 5	Standard 6
Male	-0.053	0.350	0.023	-0.375	0.050	-0.322
	(1.033)	(0.716)	(1.136)	(0.850)	(0.914)	(0.867)
Five to Ten	1.223	1.240	1.731	1.911	2.816*	1.255
	(1.399)	(0.969)	(1.538)	(1.150)	(1.237)	(1.173)
Eleven to Fifteen	-0.608	-1.175	-0.848	-0.286	-0.457	-0.631
	(1.387)	(0.961)	(1.525)	(1.141)	(1.227)	(1.163)
More than Fifteen	-0.634	-1.044	0.453	1.485	1.027	0.969
	(1.471)	(1.019)	(1.617)	(1.210)	(1.301)	(1.233)
Central	-1.485	-0.412	-2.532+	-1.219	-1.653	-0.138
	(1.237)	(0.857)	(1.361)	(1.018)	(1.095)	(1.038)
South	-0.416	-0.830	-1.629	0.156	-0.449	0.403
	(1.250)	(0.866)	(1.375)	(1.028)	(1.106)	(1.048)
Sample Size	72	72	72	72	72	72
R^2	0.04	0.09	0.08	0.09	0.12	0.04

Table 19 (Continued)

Regression Models for MWDS of 8th Grade Continued.

	Standard 7	Standard 8	Standard 9	Standard 10	Standard 11	Standard 12
Male	0.261	0.528	0.707	0.388	0.397	0.012
	(0.735)	(0.765)	(0.856)	(0.666)	(0.764)	(0.705)
Five to Ten	1.708+	0.472	1.981+	2.514**	2.644*	1.553
	(0.994)	(1.036)	(1.159)	(0.901)	(1.034)	(0.954)
Eleven to Fifteen	-0.032	-1.189	-0.182	-0.628	0.186	0.081
	(0.986)	(1.027)	(1.149)	(0.894)	(1.025)	(0.946)
More than Fifteen	0.324	0.498	0.990	1.015	1.907+	0.774
	(1.045)	(1.089)	(1.218)	(0.948)	(1.087)	(1.003)
Central	-0.781	-0.524	-1.509	-0.567	-1.906*	-1.317
	(0.880)	(0.916)	(1.025)	(0.797)	(0.914)	(0.844)
South	0.082	-0.122	-0.152	0.798	0.518	0.292
	(0.889)	(0.926)	(1.036)	(0.806)	(0.924)	(0.852)
Sample Size	72	72	72	72	72	72
R^2	0.07	0.05	0.09	0.18	0.20	0.10

Table 19 (Continued)
Regression Models for MWDS of 8th Grade Continued.

	Standard 13	Standard 14	Standard 15	Standard 16	Standard 17	Standard 18	Standard 19
Male	0.192	0.289	0.890	0.095	0.702	0.541	-0.096
	(0.859)	(0.860)	(0.825)	(0.683)	(0.732)	(0.747)	(0.891)
Five to Ten	1.968+	1.705	1.946+	0.924	1.232	0.032	2.334+
	(1.162)	(1.165)	(1.117)	(0.924)	(0.990)	(1.012)	(1.207)
Eleven to Fifteen	-0.496	-0.713	-1.943+	-0.762	-0.815	-1.916+	0.467
	(1.153)	(1.155)	(1.108)	(0.916)	(0.982)	(1.003)	(1.196)
More than Fifteen	0.523	-0.622	1.248	0.715	1.372	0.110	0.658
	(1.222)	(1.225)	(1.175)	(0.972)	(1.041)	(1.064)	(1.269)
Central	-1.462	-1.441	-0.579	-1.207	-0.168	-1.284	-1.502
	(1.028)	(1.030)	(0.988)	(0.817)	(0.876)	(0.895)	(1.067)
South	0.339	-0.307	0.723	-0.211	0.372	-0.364	0.240
	(1.039)	(1.041)	(0.998)	(0.826)	(0.885)	(0.904)	(1.078)
Sample Size	72	72	72	72	72	72	72
R^2	0.10	0.08	0.17	0.07	0.09	0.09	0.10

Standard errors in parentheses
+ $p<.10$, * $p<.05$, ** $p<.01$, *** $p<.001$

Objective Seven: Describe teacher's perceptions of the influence of the experiences by teacher's personal characteristics.

Teacher perception of the influence of experiences in middle school agricultural education separated by gender is presented in Table 20. The experience with the highest average influence score in classroom and laboratory for males and females was "Hands-on learning" (Male=4.71; Female=4.90). The experience with the lowest average influence score in classroom and laboratory was "Learning about the history of American agriculture" (Male=3.58; Female=3.61).

The experience with the highest average influence score in FFA for males and females was "Being an FFA member" (Male=4.81; Female=4.98). Female participants also had an average influence score of 4.98 for the experience of "Serving as a chapter officer." The experience with the lowest average influence score in FFA was "Participating in FFA fundraising efforts" (Male=3.94; Female=4.17).

The experiences with the highest average influence score in SAE for males and females were, Males: "Raising/exhibiting livestock" (*M*=4.74) and Females: "Receiving recognition for their SAE program" (*M*=4.66). The experiences with the lowest average influence score in SAE were, Males: "Learning record keeping skills through SAE program" (*M*=3.52) and Females: "The student's supervised agricultural experience program as a whole" and "Agriscience SAE programs" (*M*=4.10).

Table 20

Average Influence Scores Across Ag Ed Program Areas Separated by Gender.

Ag Ed Program Areas	Program Experiences	Average Influence Score Male	Average Influence Score Female
Classroom and Laboratory Instruction	Learning how agriculture affects/impacts life.	4.13	4.46
	Learning about the history of American agriculture.	3.58	3.61
	Learning about agriculture in Georgia.	4.10	4.41
	Learning about the Horticulture industry.	4.16	4.51
	Learning about Animal Science.	4.39	4.66
	Learning about the opportunities available in the FFA.	4.45	4.73
	Learning about agriscience.	3.90	4.17
	Learning about forestry and natural resources.	4.26	4.34
	Learning about agricultural careers.	4.03	4.29
	Learning about agricultural mechanics.	4.19	4.49
	Learning about leadership and communication.	3.77	4.29
	Learning about work ethic and employability skills.	3.68	4.10
	Learning about plant science.	3.90	4.37
	Hands-on learning.	4.71	4.90
	Educational experiences in the school greenhouse.	4.52	4.80
	Educational experiences in the school livestock facility.	4.42	4.76
	In-class laboratory experiences.	4.26	4.73
	Outdoor laboratory experiences.	4.65	4.83
	Making connections between academics and real-world situations.	4.10	4.56
FFA	Being an FFA member.	4.81	4.98
	Participating in leadership CDEs.	4.68	4.85
	Participating in animal science CDEs.	4.68	4.80
	Participating in plant science CDEs	4.65	4.78
	Participating in wildlife and natural resources CDES.	4.71	4.78
	Participating in agricultural mechanics CDEs.	4.52	4.78
	Attending summer leadership conference (FFA Camp).	4.55	4.85
	Attending FFA Conventions (State or National).	4.45	4.85
	Attending FFA Conferences.	4.42	4.76
	Attending chapter FFA meetings.	4.32	4.73
	Serving as a chapter officer.	4.74	4.98
	FFA sponsored community service projects.	4.16	4.49
	Local FFA chapter socials.	4.32	4.61
	Participating in FFA fundraising efforts.	3.94	4.17
	Earning Discovery FFA Degree.	3.97	4.41
SAE	The student's supervised agricultural experience program (SAE).	3.84	4.10
	Student's ability to make real-world connections through their SAE.	4.06	4.39

Hands-on learning through SAE program.	4.29	4.51
Learning record keeping skills through SAE program.	3.52	4.12
Raising/exhibiting livestock.	4.74	4.63
Earning money through SAE program.	4.48	4.56
Receiving recognition for SAE program.	4.55	4.66
Learning to set goals through the completion of SAE.	3.81	4.15
Learning new skills through the completion of SAE.	4.06	4.39
Agriscience SAE programs.	3.84	4.10
Learning about various areas of agriculture.	4.00	4.27

N=72. Scale: 1= *Negative*, 2= *Slightly Negative*, 3= *No Influence*, 4= *Slightly Positive*, 5= *Positive*

Table 21 reports the average influence score for the various experiences in the agricultural education program areas separated by gender. Female participants had higher average influence scores for all three agricultural education program areas. The highest average influence score for males was in the FFA program area (*M*=4.46), followed by classroom and laboratory instruction (*M*=4.17) and SAE (*M*=4.11). The highest average influence score for females was in the FFA program area (*M*=4.72), followed by classroom and laboratory instruction (*M*=4.47) and SAE (*M*=4.35).

Table 21

Average Influence Scores by Ag Ed Program Areas Separated by Gender.

Ag Ed Program Areas	Average Influence Score Male	Average Influence Score Female
Classroom and Laboratory Instruction	4.17	4.47
FFA	4.46	4.72
SAE	4.11	4.35

Scale: 1= *Negative*, 2= *Slightly Negative*, 3= *No Influence*, 4= *Slightly Positive*, 5= *Positive*

Teacher perception of the influence of experiences in middle school agricultural education separated by years of teaching experience is presented in Table 22. The experiences with the highest average influence scores in classroom and laboratory were, less than five years: "Hands-on learning" (*M*=4.94), 5-10 years: "Hands-on learning" (*M*=4.71), 11-15 years: "Outdoor laboratory experiences" (*M*=4.73), and 15+ years "Hands-on learning" (*M*=4.83). The experience with the lowest average influence score in classroom and laboratory for all years

of experience was “Learning about the history of American agriculture” (less than five years=3.61, 5-10 years=3.71, 11-15 years=3.67, and 15+ years=3.33).

The experiences with the highest average influence scores in FFA separated by years of experience were, less than five years: “Being an FFA member” (*M*=4.94) and “Serving as a chapter officer” (*M*=4.94), 5-10 years: “Being an FFA member” (*M*=4.86) and “Participating in leadership career development events” (*M*=4.86), 11-15 years: “Being an FFA member” (*M*=5.00), and 15+ years: “Participating in agricultural mechanics career development events” (*M*=4.83). The experiences with the lowest average influence scores in FFA were, less than five years: “Participating in FFA fundraising efforts” (*M*=4.00), 5-10 years: “Earning Discovery FFA Degree” (*M*=4.29), 11-15 years: “Earning Discovery FFA Degree” (*M*=4.00), and 15+ years: “Participating in FFA fundraising efforts” (*M*=3.83).

The experiences with the highest average influence scores in SAE separated by years of experience were, less than five years: “Raising/exhibiting livestock” (*M*=4.68), 5-10 years: “Raising/exhibiting livestock” (*M*=4.86), 11-15 years: “Receiving recognition for their SAE program” (*M*=4.60), and 15+ years: “Raising/exhibiting livestock” (*M*=4.75). The experiences with the lowest average influence score in SAE were, less than five years: “Learning record keeping skills through SAE program” (*M*=3.74), 5-10 years: “Learning to set goals through the completion of their SAE” (*M*=4.00), 11-15 years: “Learning record keeping skills through SAE program” (*M*=3.73), 15+ years: “The student's supervised agricultural experience program as a whole” (*M*=3.92) and “Learning record keeping skills through SAE program” (*M*=3.92).

Table 22

Average Influence Scores Across Ag Ed Program Areas Separated by Years of Teaching Experience.

Program Areas	Program Experiences	Less than 5 Years	5-10 Years	11-15 Years	15+ Years
Classroom/ Laboratory Instruction	Learning how agriculture impacts life.	4.29	4.57	4.40	4.00
	Learning about the history of American agriculture.	3.61	3.71	3.67	3.33
	Learning about agriculture in Georgia.	4.48	4.14	4.33	3.83
	Learning about the Horticulture industry.	4.35	4.36	4.40	4.33
	Learning about Animal Science.	4.58	4.50	4.53	4.50
	Learning about the opportunities available in the FFA.	4.65	4.64	4.73	4.33
	Learning about agriscience.	4.00	4.21	4.07	4.00
	Learning about forestry/natural resources.	4.32	4.21	4.33	4.33
	Learning about agricultural careers.	4.26	4.21	4.07	4.08
	Learning about agricultural mechanics.	4.32	4.43	4.40	4.33
	Learning about leadership and communication.	4.06	4.14	4.20	3.83
	Learning about work ethic and employability skills.	4.00	4.07	3.87	3.58
	Learning about plant science.	4.16	4.07	4.20	4.25
	Hands-on learning.	4.94	4.71	4.67	4.83
	Educational experiences in the school greenhouse.	4.68	4.64	4.67	4.75
	Educational experiences in the school livestock facility.	4.58	4.64	4.53	4.75
	In-class laboratory experiences.	4.52	4.57	4.60	4.42
	Outdoor laboratory experiences.	4.81	4.64	4.73	4.75
	Making connections between academics and real-world situations.	4.45	4.14	4.53	4.17
FFA	Being an FFA member.	4.94	4.86	5.00	4.75
	Participating in leadership CDEs.	4.77	4.86	4.73	4.75
	Participating in animal science CDEs.	4.77	4.71	4.73	4.75
	Participating in plant science CDEs.	4.77	4.64	4.67	4.75
	Participating in wildlife and natural resources career development events.	4.84	4.64	4.67	4.75
	Participating in agricultural mechanics career development events.	4.65	4.64	4.60	4.83
	Attending summer leadership conference.	4.77	4.79	4.60	4.67
	Attending FFA Conventions.	4.68	4.71	4.80	4.50
	Attending FFA Conferences.	4.61	4.57	4.80	4.42
	Attending chapter FFA meetings.	4.48	4.50	4.80	4.50
	Serving as a chapter officer.	4.94	4.79	4.93	4.75

	FFA sponsored community service projects.	4.26	4.50	4.33	4.42
	Local FFA chapter socials.	4.32	4.64	4.73	4.42
	Participating in FFA fundraising efforts.	4.00	4.36	4.13	3.83
	Earning Discovery FFA Degree.	4.29	4.29	4.00	4.25
SAE	The student's supervised agricultural experience program.	3.77	4.29	4.20	3.92
	Student's ability to make real-world connections through their SAE.	4.16	4.50	4.20	4.25
	Hands-on learning through SAE program.	4.35	4.57	4.53	4.25
	Learning record keeping skills.	3.74	4.21	3.73	3.92
	Raising/exhibiting livestock.	4.68	4.86	4.47	4.75
	Earning money through SAE program.	4.52	4.71	4.40	4.50
	Receiving recognition for SAE.	4.58	4.71	4.60	4.58
	Learning to set goals through the completion of SAE.	4.00	4.00	3.93	4.08
	Learning new skills through the completion of SAE.	4.26	4.29	4.20	4.25
	Agriscience SAE programs.	3.90	4.14	3.93	4.08
	Learning about various areas of agriculture.	4.06	4.14	4.27	4.25

N=72. Scale: 1= *Negative*, 2= *Slightly Negative*, 3= *No Influence*, 4= *Slightly Positive*, 5= *Positive*

Table 23 reports the average influence score for the various experiences in the agricultural education program areas separated by years of teaching experience. Average influence scores were relatively close among all groups of teachers when separated by year of teaching. The highest average influence score for teachers with less than five years of experience was in the FFA program area (*M*=4.61), followed by classroom and laboratory instruction (*M*=4.37) and SAE (*M*=4.18). The highest average influence score for teachers with 5-10 years was in the FFA program area (*M*=4.63), followed by SAE (*M*=4.40) and classroom and laboratory instruction (*M*=4.35). The highest average influence score for teachers with 11-15 years was in the FFA program area (*M*=4.64), followed by classroom and laboratory instruction (*M*=4.36) and FFA (*M*=4.22). The highest average influence score for teachers with 15+ years was in the FFA

program area (*M*=4.56), followed by SAE (*M*=4.26) and classroom and laboratory instruction (*M*=4.23).

Table 23
Average Influence Scores by Ag Ed Program Areas Separated by Years of Teaching Experience.

Ag Ed Program Areas	Less than 5 Years	5-10 Years	11-15 Years	15+ Years
Classroom/Laboratory Instruction	4.37	4.35	4.36	4.23
FFA	4.61	4.63	4.64	4.56
SAE	4.18	4.40	4.22	4.26

Scale: 1= *Negative*, 2= *Slightly Negative*, 3= *No Influence*, 4= *Slightly Positive*, 5= *Positive*

Teacher perception of the influence of experiences in middle school agricultural education separated by region is presented in Table 24. The experiences with the highest average influence scores in classroom and laboratory were, North Region: "Hands-on learning" (*M*=4.67), Central Region: "Hands-on learning" (*M*=4.95), and South Region: "Educational experiences in the school greenhouse" (*M*=4.95). The experience with the lowest average influence score in classroom and laboratory for all regions was "Learning about the history of American agriculture" (North Region=3.73, Central Region=3.27, and South Region=3.75).

The experiences with the highest average influence scores in FFA separated by region were, North Region: "Being an FFA member" (*M*=4.87), Central Region: "Being an FFA member" (*M*=5.00), and South Region: "Participating in leadership career development events" (M=4.90) and "Serving as a chapter officer" (M=4.90). The experience with the lowest average influence scores in FFA for all regions was "Participating in FFA fundraising efforts" (North Region=4.27, Central Region=3.82, and South Region=4.05).

The experiences with the highest average influence scores in SAE separated by region were, North Region: "Raising/exhibiting livestock" (*M*=4.53), "Earning money through SAE program" (M=4.53), and "Receiving recognition for their SAE program" (M=4.53), Central

Region: “Raising/exhibiting livestock” (*M*=4.82), and South Region: “Receiving recognition for their SAE program.” (*M*=4.80). The experiences with the lowest average influence score in SAE were, North Region: “Learning record keeping skills through SAE program” (*M*=3.77), Central Region: “Learning record keeping skills through SAE program” (*M*=3.59), and South Region: “Agriscience SAE programs” (*M*=4.20).

Table 24
Average Influence Scores Across Ag Ed Program Areas Separated by Region.

Program Areas	Program Experiences	North Region	Central Region	South Region
Classroom/ Laboratory Instruction	Learning how agriculture affects/impacts life.	4.40	4.18	4.35
	Learning about the history of American agriculture.	3.73	3.27	3.75
	Learning about agriculture in Georgia.	4.47	3.91	4.40
	Learning about the Horticulture industry.	4.27	4.27	4.60
	Learning about Animal Science.	4.40	4.64	4.65
	Learning about FFA opportunities.	4.53	4.50	4.85
	Learning about agriscience.	4.07	3.91	4.20
	Learning about forestry and natural resources.	4.17	4.32	4.50
	Learning about agricultural careers.	4.10	4.18	4.30
	Learning about agricultural mechanics.	4.23	4.41	4.50
	Learning about leadership and communication.	4.17	3.82	4.20
	Learning about work ethic and employability skills.	4.00	3.73	4.00
	Learning about plant science.	4.10	4.05	4.40
	Hands-on learning.	4.67	4.95	4.90
	Educational experiences in the school greenhouse.	4.50	4.68	4.95
	Educational experiences in the school livestock facility.	4.43	4.68	4.80
	In-class laboratory experiences.	4.30	4.59	4.80
	Outdoor laboratory experiences.	4.53	4.91	4.90
	Making connections between academics and real-world situations.	4.43	4.05	4.60
FFA	Being an FFA member.	4.87	5.00	4.85
	Participating in leadership CDEs.	4.77	4.68	4.90
	Participating in animal science CDEs.	4.70	4.77	4.80
	Participating in plant science CDEs.	4.73	4.68	4.75
	Participating in wildlife and natural resources	4.73	4.77	4.75

	CDEs.			
	Participating in agricultural mechanics CDEs.	4.57	4.73	4.75
	Attending summer leadership conference.	4.63	4.82	4.75
	Attending FFA Conventions.	4.60	4.68	4.80
	Attending FFA Conferences.	4.60	4.59	4.65
	Attending chapter FFA meetings.	4.70	4.45	4.45
	Serving as a chapter officer.	4.83	4.91	4.90
	FFA sponsored community service projects.	4.53	4.05	4.40
	Local FFA chapter socials.	4.50	4.27	4.70
	Participating in FFA fundraising efforts.	4.27	3.82	4.05
	Earning Discovery FFA Degree.	4.37	4.05	4.20
SAE	The student's supervised agricultural experience program.	3.80	3.82	4.45
	Student's ability to make real-world connections through their SAE.	4.17	4.09	4.55
	Hands-on learning through SAE program.	4.33	4.32	4.65
	Learning record keeping skills through SAE.	3.77	3.59	4.30
	Raising/exhibiting livestock.	4.53	4.82	4.75
	Earning money through SAE program.	4.53	4.45	4.60
	Receiving recognition for their SAE program.	4.53	4.55	4.80
	Learning to set goals through SAE.	3.90	3.82	4.35
	Learning new skills through the completion of SAE.	4.17	4.09	4.55
	Agriscience SAE programs.	4.00	3.77	4.20
	Learning about various areas of agriculture through SAE.	4.10	3.86	4.55

N=72. Scale: 1= *Negative,* 2= *Slightly Negative,* 3= *No Influence,* 4= *Slightly Positive,* 5= *Positive*

Table 25 reports the average influence score for the various experiences in the agricultural education program areas separated by Region. Average influence scores were relatively close between North Region and Central Region, however South Region teachers had the highest average scores among all three program areas and were notably higher in two of the three areas. The highest average influence score for teachers from the North Region was in the FFA program area (*M*=4.63), followed by classroom and laboratory instruction (*M*=4.29) and SAE (*M*=4.17). The highest average influence score for teachers from the Central Region was in the FFA program area (*M*=4.55), followed by classroom and laboratory instruction (*M*=4.27) and SAE (*M*=4.11). The highest average influence score for teachers from the South Region was in the

FFA program area (*M*=4.65), followed by SAE (*M*=4.52) and classroom and laboratory instruction (*M*=4.51).

Table 25
Average Influence Scores by Ag Ed Program Areas Separated by Region.

Program Areas	North Region	Central Region	South Region
Classroom/Laboratory Instruction	4.29	4.27	4.51
FFA	4.63	4.55	4.65
SAE	4.17	4.11	4.52

Scale: 1= *Negative*, 2= *Slightly Negative*, 3= *No Influence*, 4= *Slightly Positive*, 5= *Positive*

To better understand the application of teacher characteristics to the agriculture education program areas, a comparison of the means for each respective group was conducted in reference to gender, region, and years of teaching experience. A t-test was used to analyze the differences that may exist between males and females, while an analysis of variance (ANOVA) was conducted to ascertain whether there were differences in the means in varying regions and levels of teaching experience. As reported in Table 26, the t-test between males and females revealed statically significant differences in the means in both classroom and laboratory experiences (*p*=.003) and FFA experiences (*p*=.004). In both areas, females reported higher means than their male counterparts. However, the means were not significantly different when considering SAE experiences.

Table 26
T-Test Between Males and Females For Each Ag Ed Program Area.

Ag Ed Program Areas	*Mean* for Males	Male *SD*	*Mean* for Females	Female *SD*	T-Test Significance
Classroom and Laboratory	4.17	0.41	4.48	0.43	0.003
FFA	4.46	0.41	4.72	0.27	0.004
SAE	4.11	0.55	4.35	0.67	0.105

N for Males=31; *N* for Females=41

ANOVAs were conducted to accurately assess whether there were differences in the means reported among regions and at various levels of teaching experience in reference to the agriculture education program areas. The significance level used to determine differences in means was $p<.05$. The ANOVA conducted for differing regions, reported in Table 27 revealed no statistically significant differences in means in any of the agriculture education program areas. Similarly, the ANOVA conducted to assess differences in various levels of teaching experience (Table 28) also showed no significant findings, suggesting that the means were not significantly different regardless of years of teaching.

Table 27
One-Way Analysis of Variance of Ag Ed Program Areas by Region.

Ag Ed Program Areas	*df*	*SS*	*MS*	*F*	*p*
Classroom and Laboratory Experiences					
Between Groups	2	0.76	0.38	1.98	0.15
Within Groups	69	13.28	0.19		
Total	71	14.04			
FFA					
Between Groups	2	0.11	0.06	0.42	0.66
Within Groups	69	9.16	0.13		
Total	71	9.27			
SAE					
Between Groups	2	2.14	1.07	2.83	0.07
Within Groups	69	26.13	0.38		
Total	71	28.27			

Regions consist of North, South, and Central

Table 28
One-Way Analysis of Variance of Ag Ed Program Areas by Years of Teaching Experience.

Ag Ed Program Areas	*df*	*SS*	*MS*	*F*	*p*
Classroom and Laboratory					
Between Groups	3	0.18	0.06	0.30	0.83
Within Groups	68	13.86	0.20		
Total	71	14.04			
FFA					
Between Groups	3	0.05	0.02	0.13	0.94
Within Groups	68	9.21	0.14		
Total	71	9.27			
SAE					
Between Groups	3	0.47	0.16	0.38	0.77
Within Groups	68	27.80	0.41		
Total	71	28.27			

Teaching experience was grouped using Less than 5 years; 5-10 years; 11-15 years; and More than 15 years

Chapter Summary

Chapter four presented the findings of the study based upon the seven objectives that guided the study. The research objectives for the study were: (1) Describe the personal characteristics of middle school agricultural education teachers in the State of Georgia. (2) Describe the perceived importance of the Georgia Department of Education State Standards for middle school agricultural education curriculum by teachers. (3) Describe the perceived level of student competence on the Georgia Department of Education State Standards for middle school agricultural education by teachers. (4) Describe middle school agricultural education teacher's perceptions on how classroom/laboratory experiences, FFA experiences, and SAE experiences are related to a student's decision to enroll in a high school agricultural education course. (5) Determine the mean weighted discrepancy score by the teacher's perception of importance of the curriculum standard and the teacher's perception of student competence on the standard. (6) Describe mean weighted discrepancy scores by teacher's personal characteristics. (7) Describe

teacher's perceptions of the influence of the experiences by teacher's personal characteristics. The findings presented in this chapter provided a better understanding of the teachers' perceptions of the agricultural education curriculum and its relationship to secondary agricultural education enrollment. The findings further described these perceptions based upon teacher personal characteristics, specifically including gender, years of teaching experience, and agricultural education region. The findings reported in chapter four are further discussed in chapter five, along with conclusions and recommendations based upon the data.

CHAPTER 5
SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

Introduction

The purpose of this study was to determine teacher perception of the Georgia middle school agricultural education curriculum and its relationship to secondary enrollment. Middle school agricultural education provides students with accurate information regarding the agriculture industry and prepares individuals for a lifetime of informed consumer decisions. Middle school agricultural education also serves as a recruitment and retention tool for secondary agricultural education programs (Cupp & Weaver, 1994; Herren and Denham, 1990). This is critically important in today's society as agricultural literacy continues to become a growing issue (Richardson, 1999). With less than one percent of the U.S. population involved in production agriculture and almost ninety percent of the population being two or three generations removed from involvement, the country is quickly approaching a time where an agriculturally literate society is almost non-existent (USEPA, 2012; Leising & Zilbert, 1994).

While agricultural education has the potential to assist with this growing issue, there has been little research effort regarding the middle school agricultural education curriculum and its relationship to secondary enrollment. In order for agricultural education to assist with these growing issues, students must first be enrolled in the courses. Successfully attracting students to courses can be difficult because the educational needs of students continually change and therefore the agricultural education curriculum must also change to meet student demands/needs.

This requires a consistent assessment of the curriculum to determine if students are competent in the standards and if the curriculum is changing to meet learner needs.

Summary of the Study

This study was designed to determine if the middle school agricultural education curriculum was tailored to the needs of the modern student by determining the importance and student competence of each curriculum standard as perceived by the agricultural education teacher. The AAAE National Research Agenda for agricultural education served as a guide for the research objectives and methodology of the study. This study assisted in the research effort to determine solutions to research priority number four which is meaningful, engaged learning in all environments (Edgar, Retallick, & Jones, 2016). More specifically, this study focused on the solution to the research priority question, "How can delivery of educational programs in agriculture continually evolve to meet the needs and interests of students?" (Edgar, Retallick, & Jones, 2016, p. 39). This research priority and question was the focus of this study as it was designed to determine the educational needs and desires of students currently enrolled in agricultural education programs. The research question, based upon the National Research Agenda, guided the development of the objectives for the study.

1. Describe the personal characteristics of middle school agricultural education teachers in the State of Georgia.
2. Describe the perceived importance of the Georgia Department of Education State Standards for middle school agricultural education curriculum by teachers.
3. Describe the perceived level of student competence on the Georgia Department of Education State Standards for middle school agricultural education by teachers.

4. Describe middle school agricultural education teacher's perceptions on how classroom/laboratory experiences, FFA experiences, and SAE experiences are related to a student's decision to enroll in a high school agricultural education course.
5. Determine the mean weighted discrepancy score by the teacher's perception of importance of the curriculum standard and the teacher's perception of student competence on the standard.
6. Describe mean weighted discrepancy scores by teacher's personal characteristics.
7. Describe teacher's perceptions of the influence of the experiences by teacher's personal characteristics.

Agricultural education is composed of three components including classroom and laboratory instruction, SAE, and FFA. Students enrolled in agricultural education courses will have experiences in each of these three areas. The experiences and curriculum standards in middle school agricultural education served as the variables within the study because they ultimately influence the teacher's perception of standard competence vs. importance and influence upon secondary enrollment. These experiences not only shape a teacher's perception in these areas, but also ultimately impact student perception of agricultural education and matriculation. This study described teacher perception in these areas as a means to determine if the middle school agricultural curriculum is meeting the needs of the modern student. A review of relevant literature failed to yield a high level of research regarding middle school agricultural education, the curriculum, experiences, or relationship to secondary enrollment (Myers, Dyer, & Breja, 2003). The findings and conclusions presented in this chapter can assist in closing the gap between theory and practice (Baker & Trussell, 1981; Findlay, 1992; Duncan, et al., 2006). "The

gap between theory and practice could be eliminated by reducing theory to what was needed to perfect the practice (teaching)" (Findlay, 1992, p. 28).

This descriptive and correlational study utilized a quantitative non-experimental survey research design. Participants completed an online questionnaire used to determine perceptions of the middle school agricultural education curriculum and it relationship to secondary enrollment. A simple random sample (N=71) of the population was calculated using Cochran's (1977) sample size formula for continuous data and minimum return sample size. Participants then completed the online questionnaire based upon their perception of the importance of each curriculum standard and the level of competence among their students upon completion of that standard. Further, teachers were asked to review a list of experiences available to student in middle school agricultural education based upon the three-ring model (classroom/laboratory instruction, SAE, and FFA) and indicate their perception of the level of influence that each of these experiences had upon secondary enrollment decisions. The collected data was analyzed and reported using a variety of statistical methods based upon the specific objective including frequencies, percentages, means, standard deviations, MWDS, t-tests, and ANOVAs.

Conclusions and Discussion

The conclusions and discussion presented were based on the themes that emerged upon completion of data analysis and review. Teacher perceptions of the middle school agriculture education curriculum/experiences yielded the following conclusions:

1. Years of teaching experience significantly declined beyond the group of teachers with less than five years of teaching experience.
2. Georgia middle school agricultural educators lack ethnic diversity.

3. The curriculum standard with the highest mean regarding perceived importance was 6th Grade “Students will demonstrate the importance of agriculture in daily life”.
4. The grade level with the highest grand mean in regards to perceived importance of the curriculum standards was 7th grade.
5. The curriculum standard with the highest mean regarding perceived student competence was 7th Grade “Express the importance of agriculture in daily life”.
6. The grade level with the highest grand mean in regards to perceived competency of the curriculum standards was 7th grade.
7. All areas of agricultural education were represented in the “top ten” most influential experiences with four from classroom/laboratory, four from FFA, and two from SAE.
8. FFA experiences were perceived to have the greatest influence upon secondary enrollment.
9. Teachers indicated an overall influence rating for middle school agricultural education to be an 8.11 out of 10.0.
10. The curriculum standard with the highest MWDS was “Develop leadership skills, characteristics, and responsibilities”.
11. Sixth grade had the highest average MWDS.
12. Teachers with 5-10 years of teaching experience had the highest MWDS for curriculum standards in all grades.
13. Regressions indicated both marginally significant and significantly higher MWDS among teachers with five to ten years of experience and more than fifteen years of experience, when compared to those with less than five years of experience across several standards and grade levels.

14. Regressions indicated both marginally negative significant and significantly negative MWDS among teachers with eleven to fifteen years of experience when compared to those with less than five years of experience across several standards and grade levels.
15. Regressions indicated both marginally negative significant and significantly negative MWDS among teachers from the central region when compared to those from the north region across several standards and grade levels.
16. The regression for 7th grade standard 2 accounted for the highest amount of variance.
17. Males and females revealed statically significant differences in the means in both classroom and laboratory experiences and FFA experiences.

Conclusion: Years of teaching experience significantly declined beyond the group of teachers with less than five years of teaching experience.

Participants in this study were not equally distributed across varying levels of years of teaching experience. The largest group of participants reported less than five years of teaching experience. Beyond those with less than five years of teaching experience, participation declined sharply with only twelve participants having fifteen or more years of experience. For data analysis purposes, teachers with more than fifteen years of experience were grouped together. This is consistent with existing literature regarding teacher attrition rates in agricultural education, with nearly fifty percent leaving the profession within the first five years (Ingersoll, 2003; Tippens, Ricketts, Morgan, Navarro, & Flanders, 2013). Programs should continue to be developed and implemented to assist new teachers in research-identified areas in order to assist with solutions to this issue.

Conclusion: Georgia middle school agricultural educators lack ethnic diversity.

All participants reported Caucasian/White for ethnicity. This finding is consistent with existing literature regarding the lack of diversity among agricultural educators. Approximately

eighty-eight percent of all agricultural educators are Caucasian/White (Kantrovich, 2007). Recruitment efforts and programs should be in place to effectively recruit a more diverse group of agricultural educators. Barriers should be identified and addressed to encourage all ethnic groups to consider the profession of agricultural education. A diverse teacher population will assist in meeting the needs of a more diverse student population and encourage/promote program diversity among students.

Conclusion: The curriculum standard with the highest mean regarding perceived importance was 6th Grade "Students will demonstrate the importance of agriculture in daily life".

Teachers were asked to indicate their perceived importance for each curriculum standard in middle school agricultural education. The curriculum standard with the highest mean regarding perceived importance was 6th Grade "Students will demonstrate the importance of agriculture in daily life". The means associated with perceived importance are an important part of the study because they contribute to the overall MWDS and the resulting conclusions regarding curriculum needs. Overall, teachers had a relatively high perception of importance among all curriculum standards. Standards with lower means should be evaluated to determine true student value. Agricultural education state staff and university faculty should develop strategies to assist teachers (both pre-service and in-service) in understanding the importance and value of each standard and the rationale for inclusion within the curriculum. Perceived importance could play a significant role in how that standard is presented to students and could affect the resulting level of student competence. This need for professional development is consistent with the adult learning theory that indicates that adults have higher levels of motivation to learn what they perceive as a need (Knowles, 1980; Layfield & Dobbins, 2002).

Conclusion: The grade level with the highest grand mean in regards to perceived importance of the curriculum standards was 7th grade.

The grade level with the highest grand mean in regards to perceived importance of the curriculum standards was 7th grade. This indicates that teachers perceived the seventh grade curriculum standards as the most important. The grand means associated with perceived importance are an important part of the study because the standards they represent contribute to the overall MWDS and the resulting conclusions regarding curriculum needs. Recommendations for teacher understanding of standard importance and the rationale for curriculum inclusion are the same as stated in the previous conclusion.

Conclusion: The curriculum standard with the highest mean regarding perceived student competence was 7th Grade "Express the importance of agriculture in daily life".

Teachers were asked to indicate their perceived student competence for each curriculum standard in middle school agricultural education upon completion. The curriculum standard with the highest mean regarding perceived student competence was 7th Grade "Express the importance of agriculture in daily life". This would indicate a high level of student competence as perceived by teachers. The means associated with perceived student competence are an important part of the study because they contribute to the overall MWDS and the resulting conclusions regarding curriculum needs. Teachers perceived every curriculum standard to be more important than students were competent upon completion. This indicates a discrepancy between what the students should know versus what they actually know upon completion of the standard. Agricultural education state staff and university faculty should develop strategies to assist teachers (both pre-service and in-service) in understanding how to effectively meet the unique needs of the modern learner as it pertains to each individual curriculum standard. Standards with the largest discrepancy between importance and competence should receive

priority in an effort to close the existing gap. It is possible that teachers are not utilizing the most effective strategies to meet the needs of the modern student and should be provided with professional development as needed to ensure greater student competence among standards. This need for professional development is consistent with the adult learning theory that indicates that adults have higher levels of motivation to learn what they perceive as a need (Knowles, 1980; Layfield & Dobbins, 2002).

Conclusion: The grade level with the highest grand mean in regards to perceived competency of the curriculum standards was 7th grade.

The grade level with the highest grand mean in regards to perceived student competence of the curriculum standards was 7th grade. Even though this grade level had the highest grand mean for student competence, it was still lower than the grand mean for curriculum standard importance. Seventh and eighth grade were also lower on student competence when compared to standard importance. This indicates that, as a whole, teachers perceived the curriculum for each grade level to be more important than students were competent upon completion. The grand means associated with perceived student competence are an important part of the study because the standards they represent contribute to the overall MWDS and the resulting conclusions regarding curriculum needs. Recommendations for teacher understanding of how to increase student competence are the same as stated in the previous conclusion.

Conclusion: All areas of middle school agricultural education were represented in the "top ten" most influential experiences on secondary enrollment.

All three components of agricultural education were represented in the top ten most influential experiences on secondary enrollment with four from classroom/laboratory, four from FFA, and two from SAE. Teachers perceived "Hands-on learning" to have the greatest influence related to classroom and laboratory experiences. Teachers perceived "Being an FFA member" to

have the greatest influence related to FFA experiences. Finally, teachers perceived "Raising/exhibiting livestock" to have the greatest influence related to SAE experiences. Previous research on middle school experiences related to secondary enrollment as perceived by students revealed slightly different findings. Students indicated that classroom and laboratory experiences had the greatest influence on secondary enrollment with the top ten most influential experiences having six from classroom and laboratory experiences, three from SAE experiences, and only one from FFA experiences. There were four shared experiences in the top ten as perceived by teachers and students, with "Hands-on learning" being the number one influence as perceived by students and four of the top five experiences coming from classroom and laboratory experiences (Chapman, Barrick, & Thoron, 2016). Further data analysis was performed to determine if significant differences existed between the means of the areas of agricultural education as reported by teachers. One-way ANOVA was conducted and indicted statistically significant differences between the means of at least two of the areas of agricultural education. T-tests indicated that FFA experiences were significantly different between all combinations of groups.

Teachers (both pre-service and in-service) should realize the value of classroom and laboratory instruction and not over emphasize one component of agricultural education over another. While students may have varying levels of involvement in the FFA, every student has unique educational experiences in the classroom on a day-to-day basis. Students have reported these experiences as the greatest influence upon their decision for continued enrollment. Professional development strategies need to be in place to ensure that teachers understand the value of the agricultural education program model and feel comfortable and confident in providing quality experiences for students in all areas. It is important for teachers to understand

how their perception of what influence enrollment and what actually influences students can be different. This understanding can be utilized to adjust the curriculum as necessary to meet the educational needs of a changing student population.

Conclusion: FFA experiences were perceived to have the greatest influence upon secondary enrollment.

Teachers reported a heavier emphasis on FFA experiences with four of the top five most influential experiences being from the FFA. This indicates a discrepancy between what teachers believe have the greatest influence upon secondary enrollment and what actually influences students. Students indicated that classroom and laboratory experiences had the greatest influence on secondary enrollment with the top ten most influential experiences having six from classroom and laboratory experiences, three from SAE experiences, and only one from FFA experiences (Chapman, Barrick, & Thoron, 2016). Teachers must be careful not to overemphasize one area of agricultural education at the expense of another. The agricultural education program model provides the best educational experience for students as they have quality and engaging experiences in each area. Recommendations for teacher understanding of what influences student enrollment and the value of providing students with experiences based upon the agricultural education program model are the same as stated in the previous conclusion.

Conclusion: Teachers indicated an overall influence rating for middle school agricultural education to be an 8.11 out of 10.0.

Teachers indicated an overall influence rating for middle school agricultural education to be an 8.11 out of 10.0. This indicates a high level of influence upon secondary enrollment as perceived by teachers. Therefore, teachers believe the middle school curriculum has great potential to affect matriculation of students. However, as indicated above, teachers may not perceive experiences the same way that students do. Therefore it is critically important to ensure

that middle school agricultural education programs are designed to meet the needs of the modern learner. This means providing quality experiences for students in all areas of the agricultural education program. It is also valuable to talk with students to gain a better understanding of their desires from agricultural education so that programs can be tailored to meet these needs. Programs that are designed to address student needs will likely result in better experiences, as well as student recruitment and retention within agricultural education.

Conclusion: The curriculum standard with the highest MWDS was "Develop leadership skills, characteristics, and responsibilities".

The discrepancy between teacher perceived importance of each curriculum standard (by grade level) and student competency upon completion of that standard is represented by the mean weighted discrepancy score (MWDS). The curriculum standard with the highest MWDS was "Develop leadership skills, characteristics, and responsibilities". The higher the MWDS, the greater the discrepancy between perceived importance and student competence upon completion. A list of the top ten curriculum standards with the highest MWDS reported standards from only sixth and eighth grade. The eighth grade curriculum standards were represented seven times, while the sixth grade standards were represented three times. This indicated that the seventh grade had lower discrepancy scores than those reported in sixth and eighth grade. This is an important finding because a high discrepancy score indicates that students are not as competent as they should be upon completion of the standard. Teachers (both pre-service and in-service) need to review the list of curriculum standards with the highest MWDS to determine how they could better be delivered to the modern learner. Professional development and collaboration opportunities need to be made available to teachers in order to ensure that the middle school curriculum is both developed and presented effectively. It is apparent through the findings of this study that in all standards, students are not as competent as they should be upon completion. This

warrants further evaluation of the middle school agricultural education curriculum to ensure student needs are met. This need for professional development is consistent with the adult learning theory that indicates that adults have higher levels of motivation to learn what they perceive as a need (Knowles, 1980; Layfield & Dobbins, 2002).

Conclusion: Sixth grade had the highest average MWDS.

The grade level with the highest average MWDS including all curriculum standards was sixth grade, while seventh grade had the lowest average MWDS. This indicates that the sixth grade curriculum has the greatest discrepancy between perceived importance and student competence. Therefore, specific attention needs to be given to the sixth grade curriculum to ensure that the standards are being designed and presented with the educational needs of the modern learner in mind. However, it should also be noted that every single curriculum standard was perceived as being more important than students were competent upon completion for all grade levels. Agricultural education state staff and university faculty should review the standards and provide professional development opportunities for teachers (both in-service and pre-service) regarding best practices for instructional design and presentation.

Conclusion: Teachers with 5-10 years of teaching experience had the highest MWDS for curriculum standards in all grades.

Teachers with 5-10 years of teaching experience had the highest MWDS for curriculum standards in all grades, while teachers with 11-15 years of teaching experience had the lowest MWDS for curriculum standards in all grades. This is important because higher MWDS indicate greater discrepancies between curriculum standard importance and student competence upon completion. It is hypothesized that teachers with five to ten years of experience have higher MWDS because they are better able to understand the value of the curriculum standards and accurately assess student competence upon completion, while teachers with more than eleven

years of experience have lower MWDS because they have learned how to better meet the needs of their students and ensure a greater level of student competence. It is also possible that as teachers progress in their career they understand the value of professional development and seek out assistance and support in areas of weakness or growth. This is supported by the adult learning theory that indicates that adults have higher levels of motivation to learn what they perceive as a need (Knowles, 1980; Layfield & Dobbins, 2002). Teachers in groups with higher MWDS should be offered professional development opportunities to assist in closing the gap between curriculum importance and student competence. This study identified teachers within the five to ten years of experience range as needing opportunities and support for reaching a greater level of student competence.

Conclusion: Regressions indicated both marginally significant and significantly higher MWDS among teachers with five to ten years of experience and more than fifteen years of experience, when compared to those with less than five years of experience across several standards and grade levels.

The regressions revealed a pattern across multiple standards in which those who have taught longer (with the exception of teachers with 5-11 years of experience) were more likely to report marginally significant and significantly higher, positive mean weighted discrepancy scores. This reveals that the teachers find these objectives more important than they view their students' competence upon completion. These findings were consistent with the MWDS separated by years of teaching experience presented in the previous conclusion. The regressions established significance and marginal significance for the higher MWDS discussed in the above conclusion. Conclusions and recommendations for professional development opportunities for groups of teachers with higher MWDS are consistent with the previous conclusion.

Conclusion: Regressions indicated both marginally negative significant and significantly negative MWDS among teachers with eleven to fifteen years of experience when compared to those with less than five years of experience across several standards and grade levels.

Teachers who had 11-15 years of experience reported marginally negative significant and significantly negative mean weighted discrepancy scores than teachers with less than five years of experience on several curriculum standards across grade levels. This suggests that those teachers viewed their students as being more competent than the curriculum standard is important. Teachers within this experience level group had the lowest MWDS for every grade level. Therefore, the regressions are consistent with the MWDS separated by years of teaching experience presented in previous conclusions. The regressions established significance and marginal significance for the lower MWDS discussed in the previous conclusion regarding MWDS by years of teaching experience. It was previously hypothesized that teachers with more than eleven years of experience have lower MWDS because they have learned how to better meet the needs of their students and ensure a greater level of student competence. It is also possible that as teachers progress in their career they understand the value of professional development and seek out assistance and support in areas of weakness or growth. However, it is recommended that this group of teachers be further researched to determine why they consistently have lower MWDS. Some of the individual standards were reported as a negative MWDS. The results of further study could yield information on how these teachers have successfully closed the gap between curriculum importance and student competence, which can then be used for professional development among other groups of teachers, specifically those with five to ten years of experience.

Conclusion: Regressions indicated both marginally negative significant and significantly negative MWDS among teachers from the central region when compared to those from the north region across several standards and grade levels.

Teachers from the central region reported marginally negative significant and significantly negative mean weighted discrepancy scores than teachers from the north region on several curriculum standards across grade levels. This suggests that those teachers viewed their students as being more competent than the curriculum standard is important. Teachers from the central region had MWDS on both extremes. Central region teachers had the highest MWDS for sixth grade and the lowest MWDS for seventh and eighth grade. Central region was also the only region to have a standard ("Identify the 3 main parts of the agricultural education program") with a negative MWDS when separated by region. It is recommended that this group of teachers be further researched to determine why they have lower MWDS in seventh and eighth grade when compared to the other regions. The results of further study could yield information on how these teachers have successfully closed the gap between curriculum importance and student competence, which can then be used for professional development among other groups of teachers.

Conclusion: The regression for 7th grade standard 2 accounted for the highest amount of variance.

The regression for 7th grade standard 2 accounted for the highest amount of variance. This indicates that there are other factors beyond those included in the regression (gender, teaching experience, and region) that explain the remaining amount of variance for each standard. This is to be expected, as there are many potential factors that can influence the curriculum regarding MWDS. It is recommended that further research be conducted to determine additional factors that would help explain the remaining variance for curriculum standards. This will give researchers and educators a better understanding of the factors that affect perceived

importance and student competence, which ultimately results in the MWDS. This information could assist in closing the gap between importance and student competence in an effort provide students with the best experience tailored to their educational needs.

Conclusion: Males and females revealed statically significant differences in the means in both classroom and laboratory experiences and FFA experiences.

The t-test conducted between males and females revealed statically significant differences in the means in both classroom and laboratory experiences and FFA experiences. In both areas, females reported higher means than their male counterparts. This indicates that females tend to perceive experiences in each component of agricultural education to have a higher overall influence upon a student's secondary enrollment decision. Both males and females perceived FFA to have the most influence upon a student's enrollment decision followed by classroom and laboratory experiences and SAE experiences respectively. Previous research on middle school experiences related to secondary enrollment as perceived by students revealed slightly different findings. Students indicated that classroom and laboratory experiences had the greatest influence on secondary enrollment (Chapman, Barrick, Thoron, 2016). Consistent with recommendations mentioned in previous conclusions, teachers (both pre-service and in-service) should realize the value of classroom and instruction and not over emphasize one component of agricultural education over another. Professional development strategies need to be in place to ensure that teachers understand the value of the agricultural education program model and feel comfortable and confident in providing quality experiences for students in all areas.

Recommendations for Practice

Based upon the findings and conclusions of the study, nine specific recommendations for practice were determined. These recommendations address trends and potential areas of growth as it pertains to the objectives and purpose of the study. Agricultural educators, state agricultural

education staff, and teacher educators should review these recommendations to better facilitate the growth and development of agricultural education.

Agricultural educators should carefully review curriculum standards to ensure that they understand the need for inclusion into the curriculum. This understanding is important and has a resulting impact upon a teacher's perception of the overall importance and value of the standard. The value placed upon a specific standard can influence the methods and strategies used to present it to the class and ultimately impact a students experience and resulting competency. The agricultural education curriculum is unique in that it can and should be designed to meet the specific needs of the local community. However, teachers must be careful not to intentionally or unintentionally place higher values or priority upon specific standards where it is not warranted by the needs and demands of the local community.

Agricultural educators should also understand their unique role in the teaching and learning process and ensure that each standard and the middle school agricultural education curriculum as a whole is presented according to the educational needs of the students. The instructional design of the course should be designed to meet the needs of the local community and the educational needs and desires of the students being served. The instructional methods/strategies used will have a resulting impact upon overall student experience in agricultural education and competency upon completion. Agricultural educators should keep this in mind during the instructional design process.

The agricultural education program model should serve as the guiding model for the instructional/curriculum design process in agricultural education courses. The agricultural education program model has three components including classroom and laboratory instruction, supervised agricultural experience, and FFA. Agricultural educators tend to place greater value

and emphasis on one of the three components, when they should be represented equally within the curriculum. Agricultural educators need to fully understand the value and importance of classroom/laboratory instruction and not over emphasize one component of the agricultural education program model over another. Agricultural educators tend to place a heavier emphasis on FFA experiences, however students have indicated that their experience in classroom and laboratory instruction have the greatest influence upon their secondary enrollment decisions. While FFA experiences are often times some of the most hands-on and exciting experiences in agricultural education, it is important to remember that not every student is highly involved in FFA, but all students are highly involved in the classroom instruction on a daily basis. Therefore, classroom and laboratory instruction has a major impact on a student's overall experience in agricultural education, which could be a key factor as it pertains to matriculation.

Teachers must make a conscious effort to ensure that each of the three components of agricultural education are equally represented within the curriculum and that students are provided with quality educational experiences within each area. This means that agricultural educators need to understand the value of the agricultural education program model and use it as the foundation for curriculum/instructional design. This model provides students with a well-rounded experience in agricultural education that will provide them with the best possible learning opportunity. This will also assist in meeting the diverse needs of the student population and likely lead to an increase in the number of students who continue enrollment in agricultural education as they transition from middle school to high school.

The educational needs and desires of students are constantly changing and it is important for the agricultural education curriculum and instructional strategies to be consistently reviewed and altered as needed to meet these needs. Agricultural educators should adjust teaching methods

and strategies to meet the educational needs of the modern learner. Teachers must understand that curriculum and methods must be based upon a fluid system that can be changed or altered to meet the needs of a diverse student population. This is essential to ensure that students have the best educational experience possible. Meeting these diverse educational needs are also important in regards to student competency of curriculum standards upon completion. If the curriculum is not designed and presented according to the educational needs of the modern learner, then retention of information will be affected. This process also affects a student's perception of agricultural education, as the greatest portion of their time will be spent in the classroom. This perception will not only impact competency, but will also influence a student's secondary enrollment decision. Agricultural educators should learn the educational needs and desires of their students and ensure that the curriculum and instructional strategies are designed to appropriately address those needs.

Agricultural education includes many different units and standards covering a wide variety of topics in agriculture. It can be a challenge to effectively design instruction for each standard, specifically for those who are new to the profession. The results of this study provide insight into the specific standards where student competency is lower than it should be in relation to the level of importance placed upon it by the teacher. This creates a discrepancy between the level of importance and the resulting student competency upon completion of that specific standard. Agricultural educators should be provided with professional development opportunities as needed to address these identified areas. Agricultural education state staff and teacher educators should utilize the results of this study in the design and implementation of professional development opportunities for agricultural educators.

Professional development opportunities will provide teachers a means of learning how to close the gap between importance and competency among identified standards. Agricultural educators should seek out assistance and professional development opportunities in agricultural education program areas or curriculum standards when a specific weakness or area of potential growth is identified. While it is important to develop these opportunities for teachers, it is also necessary for teachers to perform a self-evaluation and attend the professional development opportunities in areas of need. Additionally, state staff and teacher educators in agricultural education should continually evaluate these professional development opportunities. This will help to determine overall program effectiveness as it pertains to the specific needs of the teachers and assist in identifying the necessary changes to the design/implementation of the professional development opportunity. However, the result of this professional growth will have a direct impact on student competency and teacher confidence in the curriculum and instructional design process.

Recommendations for Teacher Preparation and Professional Development

Based upon the findings and conclusions of the study, seven specific recommendations for teacher preparation and professional development were determined. These recommendations address trends and potential areas of growth as it pertains to the objectives and purpose of the study. Agricultural educators, state agricultural education staff, and teacher educators should review these recommendations to better facilitate the growth and development of agricultural education.

Agricultural education state staff and teacher educators should develop strategies and professional development opportunities to assist teachers (both pre-service and in-service) in understanding the importance and value of each curriculum standard and the rationale for

inclusion within the curriculum. It is important for agricultural educators to have a sound understanding of the rationale behind the development and inclusion of standards within the curriculum. This will help teachers to realize the true value and importance of each standard, which could ultimately impact how that particular standard is taught to a group of students. Teachers must maintain this understanding and ensure that the instructional methods used are meeting the needs of their students. Agricultural education state staff and teacher educators should develop strategies and professional development opportunities to assist teachers (both pre-service and in-service) in understanding how to effectively meet the unique needs of the modern learner as it pertains to each individual curriculum standard. This is essential in providing students with the best possible educational experience, which could ultimately impact matriculation. State staff should also provide middle school agricultural education teachers with the opportunity to meet and review each standard on a consistent basis. Teachers and state staff should work together to determine the need for each standard and make changes as necessary to meet the needs of the modern learner within the State of Georgia. State staff and teacher educators should further develop strategies, professional development, and collaboration opportunities to ensure that the middle school agricultural education curriculum is developed and presented according to these identified learner needs. It is important to understand that the agricultural education curriculum will need to constantly change to meet the demands of society and the educational needs of students. The curriculum needs to be carefully reviewed to ensure that it consistently meets these needs and should be changed as needed to accomplish this goal.

The agricultural education program model serves as the foundation for the agricultural education program and includes classroom/laboratory instruction, SAE, and FFA. A well-designed curriculum and program should provide students with experiences in all three areas.

Each component is represented equally within the model and it is important that one area of agricultural education does not take precedence over the others. Agricultural education state staff and teacher educators should develop strategies and professional development opportunities to ensure that teachers understand the value of the agricultural education program model and feel comfortable and confident in providing quality experiences for students in all areas. Agricultural educators tend to place a heavier emphasis or value upon one area of the model, while the other two are neglected. Often times, teachers focus more on FFA experiences, even if this focus is not intentional. Teachers should make a conscious and consistent effort to ensure that students receive quality instruction and experiences in all three areas of agricultural education. This will provide students with a well-rounded experience in agricultural education that will better prepare them for their post-secondary educational goals or direct entry into a global and ever-changing workforce.

Agricultural education state staff and teacher educators should review the middle school agricultural education curriculum standards with the highest MWDS to determine possible solutions to close the gap between standard importance and student competence. The standards with the highest MWDS represent the greatest discrepancy between what teachers feel is important and how competent students are upon completion. The standards with the highest discrepancy scores should be carefully reviewed to determine the cause. Appropriate action should be taken to reduce this discrepancy and ensure that teachers understand the value of each standard and how to utilize the most appropriate teaching methods/strategies to increase student competency. Professional development opportunities should be provided as needed to accomplish this goal. The MWDS can be further analyzed among individual groups of teachers to determine professional development needs. Agricultural educators in groups (gender, years of

teaching experience, and region) with higher MWDS should be offered professional development opportunities to assist in closing the gap between curriculum importance and student competence. These professional development opportunities should be focused on the unique needs of teachers within each group. This will require the development of differentiated professional development that is specifically designed to assist teachers within each group as they seek to reduce the overall MWDS for each individual standard.

Recommendations for Future Research

Based upon the findings and conclusions of the study, thirteen specific recommendations for future research were determined. These recommendations address trends and potential areas of growth as it pertains to the objectives and purpose of the study. Agricultural educators, state agricultural education staff, and teacher educators should review these recommendations to better facilitate the growth and development of agricultural education.

Agricultural education has a serious issue in the area of teacher matriculation. Many agricultural educators leave the profession within the first five years of experience. This trend creates a high turnover rate within the profession and causes teacher shortages across the country. In order to provide quality educational experiences for students in agricultural education, we must first have highly qualified teachers to fill the positions. There have been many studies to determine the cause of this phenomenon, but so far this has not yielded the solutions necessary to effectively resolve the issue. Research should be continued in determining the primary causes of why agricultural teachers leave the profession within the first five years. These studies should include a mixed methods approach with both qualitative and quantitative methods.

Agricultural educators are not a diverse population that represents a variety of different ethnic groups. Agricultural educators are primarily white/Caucasian with very little diversity. This can cause the perception that agricultural education only serves a specific population and could prevent the enrollment of a diverse student population. Student populations are continually becoming more diverse and it is essential to identify methods to recruit agricultural educators that represent different ethnicities as well. This will allow the inclusion of different perspectives and cultural backgrounds within the field of agricultural education. Students will better understand that the agriculture industry and agricultural education serves a diverse population of individuals. Further research is recommended to determine methods of attracting a more diverse group of agricultural educators. These studies should also examine the barriers associated with entry into the profession of agricultural education among various ethnic groups.

Middle school agricultural education plays a critical role in the recruitment and retention of students in agricultural education. It is important to understand the specific experiences that have an influence upon a student's secondary enrollment decision. This will allow for the development of middle school agricultural education programs that are specifically designed to meet the educational needs of the student. The area of middle school agricultural education and more specifically the relationship to secondary enrollment is an area that has not been extensively researched within the field of agricultural education. This research gap should be addressed as one of the primary purposes of middle school agricultural education is the recruitment and retention of students in agricultural education. It is recommended that quantitative and qualitative studies be conducted to determine the role of middle school agricultural education in the recruitment and retention of students. It is further recommended that additional quantitative and qualitative studies be conducted to determine student perception of

the middle school agricultural education experiences that influence secondary enrollment decisions. The perceptions of students are critical in the design and implementation of courses and experiences in agricultural education that are designed to meet the educational needs of the modern learner.

The educational needs and desires are constantly changing with each new generation of students. It is critical to understand these students and their unique needs in order to provide them with an appropriate educational experience. Agricultural education must continually change and adapt to meet the changes of society and learner needs in order to remain relevant and provide rigor to a student's educational experience. The ability to effectively recruit and retain student in agricultural education programs is dependent upon the design of an educational experience that will meet their educational needs and desires. This will provide students with an educational program that they will enjoy and find appealing, while also challenging them academically and providing rigor to their education. Research should be conducted to determine the best instructional strategies and methods to meet the educational needs of the modern learner in regards to the middle school agricultural education standards/curriculum. Agricultural education must remain flexible in design in order to address the changing needs of each new generation of learners.

The impact of years of teaching experience on MWDS should be further investigated. As teachers began to exceed ten years of teaching experience, MWDS began to drop. The effect of years of teaching experience on the discrepancy between standard importance and student level of competence is evident, but warrants further investigation. Teachers, separated by years of experience, with higher and lower MWDS should be studied to determine the cause of these discrepancies. Specifically, further research should examine the relationship between MWDS

and years of teaching experience based upon individual curriculum standards. A specific study should further examine the relationship between MWDS and teachers with 11-15 years of teaching experience based upon individual curriculum standards, as this group had the overall lowest MWDS. The results of these studies could provide insight into the reasons and potential solutions necessary to lower discrepancies among all groups of agricultural educators.

Agricultural education programs in Georgia are separated by geographic region and further separated by area. This separation was intended to represent the agricultural differences within each region and area of the state. These groups of teachers are likely to have different experiences and programs based upon the unique needs of the community and students. These differences will ultimately impact perceptions and experiences within each agricultural education program. Agricultural education regions had an impact on MWDS, which warrants further investigation. Additional research examining the relationship between MWDS and regional location of agricultural education programs based upon individual curriculum standards is recommended. This research will provide information regarding program differences as it pertains to geographic region and how that ultimately impacts the discrepancy scores. The results of these studies could provide insight into the reasons and potential solutions necessary to lower discrepancies among all groups of agricultural educators, regardless of program location.

Further research should be conducted to determine additional factors that would help explain the remaining variance for middle school agricultural education curriculum standards across grade levels. Regressions for each curriculum standard indicated that there were more factors beyond those included in this study (gender, teaching experience, and region) that explain the remaining amount of variance for each standard. This will give researchers and educators a better understanding of the factors that affect perceived importance and student competence,

which ultimately results in the MWDS. This information could assist in closing the gap between importance and student competence in an effort provide students with the best experience tailored to their educational needs.

Further research regarding the middle school agricultural education curriculum standards is warranted. There is a need to further investigate each curriculum standard to determine if the standards are an accurate reflection of what is needed for the education of the modern learner. There may be curriculum standards that need to be added to the middle school agricultural education curriculum or removed to better address these needs. The results of these studies will provide information needed for the creation of a curriculum appropriately designed to meet the needs of the modern learner. Research should also be conducted to determine if middle school agricultural education teachers can accurately ascertain curriculum standard importance and student competence upon completion. The ability of a teacher to have a sound understanding of this process is critical in the design of effective instructional methods and could have an impact on the data collected in this study. This would also assist in understanding if teachers can effectively break down curriculum standards to teach based upon the needs of desires of each learner.

This study was focused upon the Georgia middle school agricultural education curriculum, however it would be beneficial to conduct the study in other states to identify national trends in agricultural education curriculum and its relationship to secondary enrollment. It is recommended that studies utilizing similar methods be conducted in other states to determine curriculum needs and the design of effective professional development opportunities to address those needs. These studies can be used to strengthen middle school agricultural education programs across the country and assist in the areas of recruitment and retention of

students in agricultural education. Through specific research initiatives, each state can design a curriculum best suited to the unique educational needs and desires of their students, which will ultimately assist in providing each student with the best possible experience in agricultural education. This will lead to the growth and development of programs in agricultural education that will prepare students for post-secondary success, a lifetime of informed consumer decisions, and entry into a global and diverse workforce.

Summary

Agricultural education provides students with a unique educational experience that establishes rigor and relevance to their education, while preparing them to enter into a global economy and workforce. These programs and courses also assist in the spread of agricultural literacy and the development of informed consumers. It is critical to prepare individuals to meet the modern demands of the agriculture industry and assist in the development of solutions to problems that the agriculture industry will face in the near future. The agricultural education curriculum, both in middle school and high school, equips students with the knowledge and skills necessary to enter the world as the problem solvers of the future, regardless of the career path they choose. The curriculum is a critical piece of the agricultural education program model and it is important to regularly evaluate and review the curriculum standards to ensure they are meeting the educational needs and demands of the modern student.

The middle school agricultural education curriculum can have a tremendous impact on students and their decision to continue enrollment as they transition into high school. The purpose of this study was to gain a better understanding of teacher perception of the middle school agricultural education curriculum and its relationship to secondary enrollment. The significance of the study is further justified by the AAAE national research agenda for

agricultural education research. This study assists in the solution to research priority number four which is meaningful, engaged learning in all environments (Edgar, Retallick, & Jones, 2016). More specifically, this study focuses on the solution to the research priority question, which states, "How can delivery of educational programs in agriculture continually evolve to meet the needs and interests of students?" (Edgar, Retallick, & Jones, 2016, p. 39).

The findings of the study yielded data regarding the discrepancy between teacher perception of the importance of curriculum standards and student competence upon completion of that standard. The study further provided data regarding the teachers' perception of the experiences in middle school agricultural education (based upon the program model) and its relationship to a student's secondary enrollment decision. The data analysis ultimately resulted in seventeen conclusions, which were further discussed and recommendations established for practice, professional development, teacher preparation, and future research. The findings, conclusions, and resulting recommendation had six primary themes including agricultural educator professional development, the Georgia middle school agricultural education curriculum, curriculum development, middle school agricultural education program experiences (classroom/laboratory, SAE, FFA), matriculation, and professional diversity.

The findings of this study provided a better understanding of the perceptions of Georgia middle school agricultural education teachers regarding the curriculum and experiences offered to students in middle school agricultural education. This information is essential in determining if the current curriculum is meeting the changing needs of the modern student. It also assists in understanding how experiences in all three components of middle school agricultural education relate to student secondary enrollment decisions. It is critical for agricultural education programs to continually evolve to meet the needs and interests of students, as indicated by the AAAE

national research agenda. If the agricultural education curriculum does not meet these needs, then enrollment issues will ultimately prevent the program from accomplishing its goals. The development of each student is much too important to not investigate and ensure the curriculum is designed to meet each student's diverse learning needs. This research and continued research efforts regarding the agricultural education curriculum and program experiences can have a tremendous impact on their future. This is critically important as the future of agricultural education and the agriculture industry always relies on the next generation.

REFERENCES

AGree. (2012). *Facing the future: Critical challenges to food and agriculture*. Retrieved from http://www.foodandagpolicy.org/sites/default/files/ Facing_the_Future_0.pdf

Anderman, E. M. & Maehr, M. L. (1994). Motivation and schooling in the middle grades. *Review of Educational Research, 64*(2), 287-309.

Anderson, S., Velez, J., & Thompson, G. (2014). An analysis of k-12 teachers' conceptions of agriculture prior to and during engagement in an agricultural literacy program. *Journal of Agricultural Education, 55*(3), 132-146. doi: 10.5032/jae.2014.03132

Ary, D., Jacobs, L. C., & Sorensen, C. (2010). *Introduction to research in education.* (8th Ed.). Belmont, CA: Wadsworth, Cengage Learning.

Arum, R., & Roksa, J. (2011). *Academically adrift: Limited learning on college campuses*. Chicago, IL: University of Chicago Press.

Ausburn, L. J., & Brown, D. (2006). Learning strategy patterns and instructional preferences of career and technical education students. *Journal of Industrial Teacher Education, 43*(4), 6-38.

Bain, K. (2004). *What the best college teachers do.* Cambridge, MA: Harvard University Press.

Baker, M. A., Robinson, J. S., & Kolb, D. A. (2012). Aligning kolb's experiential learning theory with a comprehensive agricultural education model. *Journal of Agricultural Education, 53*(4), 1-16. doi: 10.5032/jae.2012.0400

Baker, R. A., & Trussell, S. T. (1981). *Administrative model for the incorporation of performance-based instructional modules into university education professional development program.* (Research Series No. 5). Auburn, AL: Auburn University, Center for Vocational and Adult Education.

Bandura. A. (1986). *Social foundations of thought and action: A social cognitive theory.* Englewood Cliffs, NJ: Prentice-Hall.

Bandura, A., Barbaranelli, C., Caprara, V. G., & Pastorelli, C. (2001). Self-efficacy beliefs as shapers of children's aspirations and career trajectories. *Child Development, 72*(1), 187-206.

Barrick, R. K. & Hughes, M. (1993). Perceptions of State Vocational Education Administrators Relevant to Agricultural Education in the middle grades. *Proceedings of the Central Regional Research Conference in Agricultural Education, St. Louis, MO.*

Bartlett, J. E., Kotrlik, J. W., & Higgins, C. C. (2001). Organizational research: Determining appropriate sample size in survey research. *Journal of Information Technology, Learning, and Performance, 19*(1), 43-50.

Bennis, W. (1989). *On becoming a leader.* Cambridge, MA: Perseus Books.

Benson, P. W. (1981). Comparison of affective work competencies and selected background experiences of students, graduates, and supervisors in agricultural mechanization. *Dissertation Abstracts International, 42,* 59A.

Blackburn, D. A. (1999). Ag science fairs: The next wave in agricultural literacy. *Journal of Extension, 37*(4), 1-3.

Boone, H. N., Doerfert, D. L., & Elliot, J. (1987). Supervised occupational experience programs: History, philosophy, current status, and future implications. *The Journal of the American Association of Teacher Educators in Agriculture, 28*(4), 57-64. doi: 10.5032/jaatea.1987.04057

Boix-Mansilla, V., Miller, C., & Gardner, H. (2000). On disciplinary lenses and interdisciplinary work. In S. Wineburg and P. Grossman (Eds.) *Interdisciplinary curriculum: Challenges to implementation* (p. 17-38). New York: Teachers College Press.

Borich, G. D. (1980). A needs assessment model for conducting follow-up studies. *The Journal of Teacher Education, 3l*(3), 39-42.

Borzak, L. (1981). *Field study, A source book for experiential learning* . Beverly Hills, CA: Sage.

Brannon, T., Holley, C. W., & Key, J. P. (1989). Impact of vocational agriculture/FFA on community leadership. *Journal of Agricultural Education, 30*(3), 37-45. doi: 10.5032/jae.1989.03037

Breja, L. M., Ball, A. L., & Dyer, J. E. (2000). Problems in student retention: A Delphi Study of agriculture teacher perceptions. *Paper presented at the 27th Annual National Agricultural Education Research Conference, San Diego, CA.*

Breja, L., & Dyer, J. (1999). Attitudes of agriculture teachers, teacher educators, and state staff toward recruitment. *Proceedings of the 26th Annual National Agricultural Education Research Conference, Orlando, FL, 26, 536-548.*

Bricker, G. A. (1914). *Agricultural education for teachers*. New York, NY: American Book Company.

Bridges, J. (2017). *Georgia agriculture education.* Retrieved from the Georgia Agriculture Education Website. http://georgiaffa.org

Briers, G. E. (2005). Lighting their fires through experiential learning. *The Agricultural Education Magazine, 78*(3), 4-5.

Budke, W. E. (1991). Agriculture science-striving for excellence. *The Agricultural Education Magazine, 63*(7), 4-11.

Buriak, P. (1989). Incorporating agriscience into agricultural mechanics. *The Agricultural Education Magazine, 61*(9), 18, 22.

Buttriss, J. L. (2010). Nine billion mouths to feed by 2050: The challenge of establishing a sustainable food supply. *Nutrition Bulletin, 36*(2), 235-241.

Caine, R., & Caine, G. (1994). *Making connections: Teaching and the human brain*. Menlo Park, CA: Addison-Wesley Publishing.

Camp, W. G. (1987). Smith, Hughes, Page, and Prosser. *The Agricultural Education Magazine, 59*(8), 5-7.

Cannon, J. G., Kitchel, A., & Duncan, D. W. (2013). Perceived professional development needs of Idaho secondary career and technical education teachers: Program management. *Online Journal for Workforce Education and Development, 6*(1), 1-14.

Carlson, E. (2008). *The lucky few: Between the greatest generation and the baby boom.* Rotterdam, Netherlands: Springer Publishing.

Case, L. D., & Stewart, B. R. (1985). Teacher influence on the quality of supervised occupational experience. *Journal of the American Association of Teacher Educators in Agriculture, 26*(2), 2-8.

Caton-Rosser, M., Looney, B., & Schneider, K. (2014). Discovering interdisciplinary uses of online technologies in higher education. *Systemics, Cybernetics and Information, 12*(3) 17-21.

Chapman, D. L., Jr., Barrick, R. K., & Thoron, A. C. (2016). What influences middle school agricultural education students to enroll in a high school agricultural education program in Georgia. *Poster presentation. AAAE Conference, Kansas City, MO.*

Cheek, J. G., Arrington, L. R., Carter, S., & Randell, R. (1994). Relationships of supervised agricultural experience program participation and student achievement in agricultural education. *Journal of Agricultural Education, 35*(2), 1–5. doi: 10.5032/jae.1994.02001

Clark, R. W., Threeton, M. D., & Ewing, J. C. (2010). The potential of experiential learning models and practices in career and technical education & career and technical teacher education. *Journal of Career and Technical Education, 25*(2), 46-62.

Cochran, W. G. (1977). *Sampling techniques* (3rd ed.). New York: John Wiley & Sons.

Conroy, C. A. (2000). Reinventing career education and recruitment in agricultural education for the 21st century. *Journal of Agricultural Education, 41*(4), 73-84. doi: 10.5032/jae.2000.04073

Croom, D. B., & Flowers, J. L. (2001). Finding and keeping members: Perspectives of FFA members and non-members on the effectiveness of FFA programs and services. *Paper presented at the 28th Annual National Agricultural Education Research Conference, New Orleans, LA.*

Cupp, T. & Weaver, S. (1994) Agriscience contests benefit middle school FFA members. *The Agricultural Education Magazine, 67*(4), 10-11.

Dailey, A. L., Conroy, C. A., & Shelley- Tolbert, C. A. (2001). Using agricultural education as the context to teach life skills. *Journal of Agricultural Education, 42*(1), 10-19. doi: 10.5032/jae.2001.01010

Dale, E. (1946). *Audio-visual methods in teaching*. New York: The Dryden Press.

Danneberger, T. K. (1994). Integrating classroom instruction with turf grass field experience through a golf course project. *Journal of Natural Resources Life Science Education. 23* (1), 56-58.

Davenport, E. (1908). *The next step in agricultural education or the place of agriculture in our American system of education.* Urbana: University of Illinois.

Dewey, J. (1938). *Experience and Education*. New York, NY: Collier Books.

Dillman, D. A., Smyth, J. D., & Christian, L. M. (2009). *Internet, mail, and mixed-mode surveys: The tailored design method.* (3rd Edition). New York, NY: Longman.

Dobbins, T. R., & Camp, W. G. (2000). Clinical experiences for agricultural teacher education programs in North Carolina, South Carolina, and Virginia. *Proceedings of the 27th Annual National Agricultural Education Research Conference, 543-555.*

Doerfert, D. L. (2011). *National research agenda: American Association for Agricultural Education's research priority areas for 2011-2015*. Lubbock, TX: Texas Tech University, Department of Agricultural Education and Communications.

Doese, E. K. & Miller, W. W. (1988). *Factors affecting the future enrollment of students in vocational agriculture*. Cedar Falls, IA: Future Farmers of America.

Doolittle, P. E., & Camp, W. G. (1999). Constructivism: The career and technical education perspective. *Journal of Vocational and Technical Education, 16*(1), 1-17.

Dormody, T. J., & Torres, R. M. (2002). A follow-up study of agricultural education program graduates on teaching competencies. *Journal of Agricultural Education, 43*(4), 33-45. doi: 10.5032/jae.2002.04033

Doyle, T., & Zakrajsek, T. (2011). *Learner-centered teaching: Putting the research on learning into practice.* Sterling, VA: Stylus.

Duffy, S. (2010). Random numbers demonstrate the frequency of type I errors: Three spreadsheets for class instruction. *Journal of Statistics Education, 18*(2), 1-16.

Duncan, D. W., Ricketts, J. C., Peake, J. B., & Uesseler, J. (2006). Teacher preparation and in-service needs of Georgia agriculture teachers. *Journal of Agricultural Education, 47*(2), 24-35. doi: 10.5032/jae.2006.02024

Dyer, J. E., & Osborne, E. W. (1995) Participant attitudes toward supervised agricultural experience programs: A synthesis of research. *Journal of Agricultural Education 36*(2), 6-14. doi: 10.5032/jae.1995.01006

Edgar, D. W. (2012). Learning theories and historical events affecting instructional design in education: Recitation literacy toward extraction literacy practices. *Sage Open,* 4, 1-9. doi: 10.1177/2158244012462707

Edgar, D. W., Retallick, M. S., & Jones, D. (2016). *American Association for Agricultural Education national research agenda: 2016-2020.* Gainesville, FL: Department of Agricultural Education and Communication.

Edwards, M. C., & Briers, G. E. (1999). Assessing the in-service needs of entry-phase agriculture teachers in Texas: A discrepancy model versus direct assessment. *Journal of Agricultural Education, 40*(3), 40-49. doi: 10.5032/jae.1999.03040

Eichhorn, D. H. (1966). *The middle school.* New York: The Center for Applied Research in Education.

Enderlin, K. J. & Osborne, E. W. (1992). Student achievement, attitudes, and thinking skill attainment in an integrated science/agriculture course. *Proceedings of the 46th Annual Central Region Research Conference in Agricultural Education, Ausitn, MN.*

Etling, A. (1993). What is nonformal education? *Journal of Agricultural Education, 34*(4), 72-76. doi: 10.5032/jae.1993.04072

Fanno, W., & Cole, R. L. (1999). Survey of early leavers: Implications for recruitment and retention. *Paper presented at the 26th Annual National Agricultural Education Research Conference, Orlando, FL.*

Faulkner, P., Steward, A., & Baggett, C. (2006) Middle school career exploration. *The Agricultural Education Magazine, 78*(5), 22-24.

Findlay, H. J. (1992). Where do secondary vocational agriculture teachers acquire professional agricultural education competencies? *Journal of Agricultural Education, 33*(2), 52-58.

Fink, A. (1995). *The survey handbook.* Thousand Oaks, CA: Sage Publications.

Foster, R. M. (1986). Factors limiting vocational agriculture student participation in supervised occupational experience programs in Nebraska. *Journal of the American Association of Teacher Educators in Agriculture, 27*(4), 45-50. doi: 10.5032/jaatea.1986.04045

Friedel, J. N. (2011). Where has vocational education gone. *American Educational History Journal,* 38(1), 37-53.

Frick, M. (1993). Developing a national framework for middle school agriculture education curriculum. *Journal of Agricultural Education, 34*(2), 77-84. doi: 10.5032/jae.1993.02077

Frick, M. J., Birkenzolz, R. J., & Machtmes, K. (1995). 4-H member knowledge and perception of agriculture. *Journal of Agricultural Education, 36*(3), 43-49. doi: 10.5032/jae.1995.03043

Fritz, S. M. & Bell, L. C. (1993). Methodological triangulation: Agricultural education enrollment and the no-traditional student. *Proceedings of the Central Regional Research Conference in Agricultural Education, St. Louis, MO.*

Fritz, S. & Moody, L. (1997). Assessment of junior high/middle school agriculture education programs in Nebraska. *Journal of Agriculture Education, 38*(1), 61-65. doi: 10.5032/jae.1997.01061

Gardner, J. W. (1990). *On leadership.* New York: The Free Press.

Garton, B. L., & Chung, N. (1996). The in-service needs of beginning teachers of agriculture as perceived by beginning teachers, teacher educators, and state supervisors. *Journal of Agricultural Education, 37*(3), 52-58. doi: 10.5032/jae.1996.03052

Garton, B. L., & Chung, N. (1997). An assessment of the in-service needs of beginning teachers of agriculture using two assessment models. *Journal of Agricultural Education, 38*(3), 51-58. doi: 10.5032/jae.1997.03051

Georgia Farm Bureau. (2016). *Georgia agriculture.* Retrieved from Georgia Farm Bureau. http://www.gfb.org/aboutus/georgia_agriculture.html

Gibbs, H. J. (2005). It's not just in high school – Agriculture education in middle school. *Techniques: connecting education and careers*. Retrieved from www.acteonline.org/members/techniques/feb05_feature3.cfm

Gibson, G. L. (1988). Factors associated with the supervised occupational experience programs of Kentucky vocational agriculture seniors. *Dissertation Abstracts International, 48,* 2224A.

Gliem, R. R., & Gliem, J. A. (2000). Factors that encouraged, discouraged, and would encourage students in secondary agricultural education programs to join the FFA. *Paper presented at the 27th Annual National Agricultural Education Research Conference, San Diego.*

Gliem, J. A., & Gliem, R. R. (2003). Calculating, interpreting, and reporting Cronbach's alpha reliability coefficient for Likert-type scales. Midwest Research to Practice Conference in Adult, Continuing, and Community Education, Retrieved from https://scholarworks.iupui.edu/bitstream/handle/1805/344/Gliem%20%26%20Gliem.pdf?sequence=1&isAllowed=y

Greenwood, K. (2007). *Learning in the 21st century: A national report of online learning.* Retrieved from http://www.blackboard.com/resources/k12/ k-12_learning_in_the_21st_century.pdf

Griffin, C. (1992). Absorbing experiential learning. In J. Mulligan & C. Griffin (Eds.), *Empowerment through experiential learning* (pp. 31-36). London: Kogan Page.

Heath-Camp, B., & Camp, W. (1990). What new teachers need to succeed. *Vocational Education Journal, 65*(4), 22-24.

Hedrich, C. (1985). Vocational agriculture for 7th and 8th graders. *The Agricultural Education Magazine, 58*(4), 20-21.

Helsel, D. G., & Hughes, L. B. (1984). Urban students in agriculture: The challenge. *Journal of Agronomic Education*, Vol. 13, 31-33.

Herr, E. L. (1987). National allies. *Vocational Education Journal, 55*(6), 30-33.

Herren, R.V. & Denham, A. (1990). Agricultural education at the middle school. *The Agricultural Education Magazine, 63*(3), 15.

Hess, A. J. & Trexler, C. J. (2011). A qualitative study of agricultural literacy in urban youth: What do elementary students understand about the agri-food system? *Journal of Agricultural Education, 52*(4), 1-12. doi: 10.5032/jae.2011.02151

Hillison, J. (1986). *Agricultural teacher education preceding the Smith-Hughes Act*. Virginia Plytechnic Institute and State University.

Hillison, J. (1994) Why middle school/junior high programs?. *The Agricultural Education Magazine, 67*(4), 4-23.

Holton, E. H., & Burnett, M. B. (1997). Qualitative research methods. In R. A. Swanson, & E. F. Holton (Eds.), San Francisco: Berrett-Kohler Publishers.

Hoover, T. S., & Scanlon, D. C. (1991). Enrollment issues in agricultural education programs and ffa membership. *Journal of Agricultural Education, 32*(4), 2-10. doi: 10.5032/jae.1991.04002

Horwood, B. (1995). Of stones and strands: An introduction. In B. Horwood (Ed.), *Experience and the curriculum* (pp. 1- 7). Dubuque, IA: Kendall/Hunt.

Houle, C. (1980). *Continuing learning in the professions.* San Francisco, CA: Jossey-Bass.

Hughes. M. & Barrick, R. K. (1993). A model for agriculture education in public schools. *Journal of Agricultural Education, 34*(3), 59-67. doi: 10.5032/jae.1993.03059

Humphrey, J., Stewart, B., & Linhardt, R. (1994). Preservice elementary education majors' knowledge of and perceptions toward agriculture. *Journal of Agricultural Education, 35*(2), 27-30. doi: 10.5032/jae.1994.02027

Ingersoll, R. M. (2003). *Is there really a teacher shortage?* Center for the study of teaching and policy and the consortium of policy research in education. University of Washington.

Ivanitskaya, L., Clark, D., Montgomery, G., & Primeau, R. (2002). Interdisciplinary learning: Process and outcomes. *Innovative Higher Education, 27*(2), 95-111.

Joerger, R. M. (2002). A comparison of the inservice education needs of two cohorts of beginning Minnesota agricultural education teachers. *Journal of Agricultural Education, 43*(3), 11-24. doi: 10.5032/jae.2002.03011

Johnson, D. M. (1995). Arkansas agriculture teachers' opinions concerning science credit for agriculture. *Proceedings of the 22nd Annual National Agriculture Education Research Meeting.*

Joplin, L. (1981). On defining experiential education. *Journal of Experiential Education, 4*(1), 17-20.

Jones, K. R., & Bowen, B. E. (1998). A qualitative assessment of teacher and school influences on African American enrollments in secondary agricultural science courses. *Journal of Agricultural Education, 32*(4), 2-10. doi: 10.5032/jae.1998/02019

Kantrovich, A. J. (2007). *A national study of the supply and demand for teachers of agricultural education from 2004–2006*. Morehead, KY: Morehead State University.

Knapp, D., & Benton, G. M. (2006). Episodic and semantic memories of a residential environmental education program. *Environmental Education Research, 12*(2), 165–177.

Knight, J. (1987). Recruiting and retaining students: A challenge for vocational agriculture. *The Agriculture Education Magazine, 60*(1), 9-10.

Knobloch, N. A. (2003). Is experiential learning authentic? *Journal of Agricultural Education, 44*(4), 22–34. doi: 10.5032/jae.2003.04022

Knowles, M. S. (1980). *The modern practice of adult education: From pedagogy to andragogy.* Chicago, IL: Follett Publishing Company.

Kolb, D. A. (1984). *Experiential learning*. Englewood Cliffs, NJ: PrenticeHall.

Kolb, D. A., Boyatzis, R. E., & Mainemelis, C. (2001). Experiential learning theory: Previous research and new directions. In R. Sternberg and L. Zhang (Eds.) *Perspectives on cognitive learning, and thinking styles.* Mahwah, NJ: Lawrence Erlbaum Associates.

Kolb, A., & Kolb, D. A. (2005). Learning styles and learning spaces: Enhancing experiential learning in higher education. *Academy of Management Learning & Education*, *4*(2), 193–212.

Kolb, D. A., & Kolb, A. Y. (2006). Learning styles and learning spaces. In R. R. Sims & S. J. Sims (Eds.), *Learning styles and learning: A key to meeting the accountability demands in education* (pp. 45-92). New York, NY: Nova Science.

Kolb, A., & Kolb, D. A. (2009). The learning way: Meta–cognitive aspects of experiential learning. *Simulation Gaming, 40*, 297–327.

Kotrlik, J. W. (1987). Factors related to the career decisions of seniors who have taken vocational agriculture. *The Journal of American Association of Teacher Educators in Agriculture*, 250-256.

Kotrlik, J. W., Redmann, D. H., Harrison, B. C., & Handley, C. S. (2000). Information technology related professional development needs of Louisiana agriscience teachers. *Journal of Agricultural Education*, *41*(1), 18-29. doi: 10.5032/jae.2000.01018

Kouzes, J. M., & Posner, B. Z. (2002). *The leadership challenge.* San Francisco: Jossey-Bass.

Lave, J., & Wenger, E. (1991). *Situated learning: Legitimate peripheral participation.* Cambridge, UK: Cambridge University Press.

Layfield, K. D., & Dobbins, T. R. (2002). In-service needs and perceived competencies of South Carolina agricultural educators. *Journal of Agricultural Education, 43*(4), 45-65. doi: 10.5032/jae.2002.04046

Leedy, P. D. & Ormrod, J. E. (2010) *Practical Research: Planning and Design*, Ninth Edition. NYC: Merril.

Leising, J., Igo, C., Heald, A., Hubert, D., & Yamamoto, J. (1998). *A guide to food and fiber systems literacy: A compendium of standards, benchmarks, and instructional materials for grades K-12.* Stillwater, OK: W.K. Kellogg Foundation & Oklahoma State University.

Leising, J. G., Pense, S. L., & Igo, C. G. (2001). An assessment of student agricultural literacy knowledge based on the food and fiber systems literacy framework. *Proceedings of the National Agricultural Education Research Meeting: New Orleans, Louisiana, 259-268.*

Leising, J. G. & Zilbert, E. E. (1994). Validation of the California agricultural literacy framework. *Proceedings of the National Agricultural Education Research Meeting, USA, 21, 112-119.*

Lichte, J. & Birkenholz, R. J. (1993). Agricultural literacy: Where do we stand. *The Agricultural Education Magazine, 65*(7), 15- 17.

Lu, C., & Miller, L. (2002). Instructional technology competencies perceived as needed by vocational teachers in Ohio and Taiwan. *Journal of Vocational Education Research, 27*(3), 319-329.

Mabie, R., & Baker, M. (1996). A comparison of experiential learning strategies upon the science process skills of urban elementary students. *Journal of Agricultural Education, 37*(2), 1-7. doi: 10.5032/jae.1996.02001

Malpiedi, B. (1987) Agricultural education after Smith-Huges: A decade of growth and definition. *The Agricultural Education Magazine, 59*(8), 11-13.

Marshall, T., Herring, D., & Briers, G. (1992). Factors associated with enrollment in agricultural science and membership in the FFA in Texas. *Journal of Agricultural Education, 33*(4), 17-23. doi: 10.5032/jae.1992.04017

Maslow, A. H. (1943). A theory of human motivation. *Psychological Review, 50*, 370-396.

Maxwell, J. C. (1993). *Developing the leader within you*. Nashville, TN: Thomas Nelson, Inc.

Meischen, D. L., & Trexler, C. J. (2003). Rural elementary students' understanding of science and agricultural education benchmarks related to meat and livestock. *Journal of Agricultural Education, 44*(1), 43-55. doi: 10.5032/jae.2003.01043

Mercier, S. (2015). *Food and agricultural education in the United States*. Washington, DC: AGree.

Merenbloom, E. Y. (1988) *Developing effective middle schools*. Columbus, Ohio: National Middle School Association.

Miller, W. W., & Shield, C. L. (1984). Problems of beginning teachers of vocational agriculture in Iowa. *Journal of the American Association of Teacher Educators in Agriculture, 25*(4), 2-7.

Moore, G. E. (1979). Back to the basics in teaching agriculture--The project plan. *The Agricultural Education Magazine*, pp. 219- 220.

Moore, J. A. (1987). Participation in selected FFA activities. *The Agricultural Education Magazine, 60*(4), 5-6.

Mowen, D., & Harder, A. (2005). Student learning as a result of experiential education. *The Agricultural Education Magazine, 78*(3), 6-8.

Mundt, J. P., & Connors, J. J. (1999). Problems and challenges associated with the first years of teaching agriculture: A framework for preservice and in-service education. *Journal of Agricultural Education, 40*(1), 38-48. doi: 10.5032/jae.1999.01038

Myers, B. E., Dyer, J. E., & Breja, L. M. (2003) Recruitment strategies and activities used by agriculture teachers. *Journal of Agricultural Education, 44*(4), *94-105.* doi: 10.5032/jae.2003.04094

National Agricultural Research and Extension Users Advisory Board. (July, 1991). Science and education issues: *A mid year report of citizen concerns and recommendations for American agricultural research, teaching and extension*. Washington, DC: United States Department of Agriculture.

National Council for Agricultural Education. (1999). *Reinventing agricultural education for the year 2020: Creating the preferred future for agricultural education*. Alexandria, VA: W.K. Kellogg Foundation.

National Research Council. (2009). *Transforming agricultural education for a changing world.* Washington, DC: National Academies Press.

National FFA. (2016a). *Agricultural education*. Retrieved from the National FFA Organization. https://www.ffa.org/about/agricultural-education

National FFA. (2016b). *Career development events*. Retrieved from the National FFA Organization. https://www.ffa.org/participate/cdes

National FFA. (2016c). *What is FFA*. Retrieved from the National FFA Organization. https://www.ffa.org/about/what-is-ffa

National FFA. (2016d). *Chapter officer responsibilities.* Retrieved from the National FFA Organization. https://www.ffa.org/ffaresources/chapter/Pages/ChapterOfficerResponsibilities.aspx

National Middle School Association. (2003). *This we believe*. Westerville, Ohio: National Middle School Association.

National Research Council. (1988). *Understanding agriculture: New directions for education.* Washington, DC: National Academy Press.

National Research Council. (2009). *Transforming agricultural education for a changing world.* Washington, DC: National Academies Press.

Noxel, S., & Cheek, J. G. (1988). Relationship of supervised occupational experience program scope to student achievement in ornamental horticulture. *The Journal of the American Association of Teacher Educators in Agriculture, 29*(4), 24–31.

Okiror, J. J., Matsiko, B. F., & Oonyu, J. (2011). Just how much can school pupils learn from school gardening? A study of two supervised agricultural experience approaches in Uganda. *Journal of Agricultural Education, 52*(2), 24-35. doi: 10.5032/jae.2011.02024

Osborne, E. W. (1988). Planning and supervision strategies for SOE programs in agriculture. *Journal of the American Association of Teacher Educators in Agriculture, 29*(4), 6-14.

Osborne, E. W. (2007). *National research agenda: Agricultural education and communication, 2007-2010*. Gainesville, FL: University of Florida, Department of Agricultural Education and Communication.

Pense, S. L., & Leising, J. G. (2004). An assessment of food and fiber systems knowledge in selected Oklahoma high schools. *Journal of Agricultural Education, 45*(3), 86-96. doi: 10.5032/jae.2004.03086

Pintrich, P. R., & Zusho, A. (2007). Student motivation and self-regulated learning in the college classroom. In R. P. Perry & J. C. Smart (Eds.), *The scholarship of teaching and learning in higher education: An evidence-based perspective* (pp. 731–810). New York, NY: Springer.

Phipps, L. J., & Osborne, E. W. (1988). *Handbook on agricultural education in public schools.* Danville, IL: Interstate.

Phipps, L. J., Osborne, E. W., Dyer, J. E., & Ball, A. L. (2008). *Handbook on agricultural education in the public schools*. Clifton Park, NY: Thomson Delmar Learning.

Powell, D., Agnew, D., & Trexler, C. (2008). Agricultural literacy: clarifying vision for practical application. *Journal of Agricultural Education, 49*(1), 85-98. doi: 10.5032/jae.2008.01085

Ramsey, J. W., & Edwards C. M. (2004). Informal learning in science: Does agricultural education have a role? *Journal of Southern Agricultural Education Research, 54*(1), 86–99.

Ravid, R. (2011). Practical Statistics for Educators. 4th Ed. University Press of Americas, Inc.: Lanham, MD.

Rayfield, J. & Croom, B. (2010). Program needs of middle school agriculture education teachers: A delphi study. *Journal of Agricultural Education, 51*(4), 131-141. doi: 105032/jae.2010.04131

Richlin, L. (2006). *Blueprint for learning: Constructing college courses to facilitate, assess, and document learning.* Sterling, VA: Stylus Publishing.

Reis, R. & Kahler, A. (1997). Factors influencing enrollment in agricultural education programs as expressed by Iowa secondary agricultural education students. *Journal of Agricultural Education, 38*(2), 38-48. doi: 10.5032/jae.1997.02038

Retallick, M. S., & Martin, R. A. (2005). Economic impact of supervised agricultural experience in Iowa: A trend study. *Journal of Agricultural Education, 46*(1), 44–54. doi: 10.5032/jae.2005.01044

Retallick, M. S., & Martin, R. A. (2008). Fifteen year enrollment trends related to the three components of comprehensive agricultural education programs. *Journal of Agricultural Education, 49*(1), 28 – 38. doi: 10.5032/jae.2008.01028

Richardson, L. (1990). Reinforcing the common bond between urban and agricultural interests. *The Agricultural Education Magazine, 62* (9), 7-18.

Richardson, R. H. (1999). Ag education as urban survival school. *The Agricultural Education Magazine, 71*(4), 18-19.

Riesenberg, L. E., & Lierman, S. R. (1990). Perceptions of administrators and instructors concerning factors influencing secondary agriculture enrollment. *Journal of Agricultural Education, 31*(2), 7-11. doi: 10.5032/jae.1990.02007

Roberts, T. G. (2006). A philosophical examination of experiential learning theory for agricultural educators. *Journal of Agricultural Education, 47*(1), 17–29. doi: 10.5032/jae.2006.01017

Roberts, T. G., Harder, A., & Brashears, M. T. (2016). *American Association for Agricultural Education national research agenda: 2016-2020.* Gainesville, FL: Department of Agricultural Education and Communication.

Robinson, C. H., & Jenks, F. B. (1913). *Agricultural instruction in high schools*. Washington, DC: U.S. Government Printing Office.

Roegge, C. A., & Russell, E. B. (1990). Teaching applied biology in secondary agriculture: Effects on student achievement and attitudes. *Journal of Agricultural Education, 31*(1), 27-31. doi: 10.5032/jae.1990.01027

Rossetti, R., Padilla, D., & McCaslin, N.L. (1994). *An examination of middle school enrollment in agricultural education and membership in the National FF A Organization in the United States*. Columbus: Ohio State University, Department of Agricultural Education, Research 73.

Ruhland, S. K., & Bremer, C. D. (2002). Professional development needs of novice career and technical education teachers. *Journal of Career and Technical Education, 19*(1), 18-31.

Rutherford, T. A., Townsend, C. D., Briers, G. E., Cummins, R., & Conrad, C. R. (2002). Leadership self-perceptions of WLC participants. *Journal of Agricultural Education, 43*(2), 22-33. doi: 10.5032/jae.2002.02022

Ryan D., & Lockaby, J. (1996). An assessment of the agricultural literacy level of city and government leaders. *Proceedings of the Fifteenth Annual Western Region Agricultural Education Research Meeting, USA, 96, 77-88.*

Salkind, N. J. (1997). *Exploring research (3rd ed.).* Upper Saddle River, NJ: Prentice Hall.

Silverberg, M., Warner, E., Fong, M., & Goodwin, D. (2004). *National assessment of vocational education: Final report to Congress*. Washington, DC: US Department of Education, Office of the Under-Secretary, Policy and Program Service.

Smith, M. K. (2001). David A. Kolb on experiential learning. *Encyclopedia of informal education* , 1-15.

Spiess, J. (1992). Using experimentation as experiential learning. *The Agricultural Education Magazine, 65* (5), 13-15.

Staller, B. (2001). Teachers as moves managers. *FFA Advisors Making a Difference, 9*(7), 13.

Stasz, C., & Grubb, W. N. (1991). *Integrating academic and vocational education: Guidelines for assessing a fuzzy reform*. Berkeley, CA: National Center for Research in Vocational Education.

Steinaker, N. W., & Bell, M. R. (1979). *The experiential taxonomy: A new approach to teaching and learning*. New York: Academic Press.

Stimson, R. W. (1919). *Vocational agricultural education by home projects.* The Macmillan Company.

Stone, J. R., Alfeld, C., Pearson, D., Lewis, M. V., & Jensen, S. (2005). *Building academic skills in context: Testing the value of enhanced math learning in CTE.* St. Paul, MN: National Research Center for Career and Technical Education.

Sukamolson, S. (2007). Fundamentals of quantitative research: Bangkok, Thailand: EJTR.

Sutphin, H. D., & Newson-Stewart, M. (1995). Student's rationale for selection of agriculturally related courses in high school by gender and ethnicity. *Journal of Agricultural Education, 36*(2), 54-61. doi: 10.5032/jae.1995.02054

Talbert, B. A., & Larke, Jr., A. (1995). Factors influencing minority and non-minority students to enroll in an introductory agriscience course in texas. *Journal of Agricultural Education, 36*(1), 38-45. doi: 10.5032/jae.1995.01038

Talbert, B. A., Vaughn, R., Croom, D. B., & Lee, J. (2007). *Foundations of agricultural education* (2nd Ed.). Danville, IL: Professional Educators Publications, Inc.

Taylor, P. (2014). *The next America: Boomers, millennials and the looming generational showdown*. New York, NY: Pew Research Center.

Terry, R., Herring, D., & Larke, A. (1992). Assistance needed for elementary teachers in Texas to implement programs of agricultural literacy. *Proceedings of the twenty-first national agricultural education research meeting, Dallas, TX, 233-240.* doi: 10.5032/jae.1992.02051

Trexler, C. J., & Hikawa, H. (2001). Elementary and middle school agriculture curriculum development: An account of teacher struggle at countryside charter school. *Journal of Agricultural Education, 42*(3), 53-63. doi: 10.5032/jae.2001.03053

Trexler, C. J., Johnson, T., & Heinze, K. (2000). Elementary and middle school teacher ideas about the agri-food system and their evaluation of agri-system stakeholders' suggestions for education. *Journal of Agricultural Education, 41*(1), 30-38. doi: 10.5032/jae.2000.01030

Tippens, A., Ricketts, J. C., Morgan, A. C., Navarro, M., & Flanders, F. B. (2013). Factors related to teachers' intentions to leave the classroom early. *Journal of Agricultural Education, 54*(4), 58-72. doi: 10.5032/jae.2013.04058

True, A. C. (1929). *A history of the agricultural education in the United States 1785-1925.* Washington, DC: U.S. Government Printing Office.

United States Department of Agriculture, Economic Research Service (2014). *Food prices and spending.* Retrieved from: http://www.ers.usda.gov/ data-products/ag-and-food-statistics-charting- the-essentials/food-prices-and-spending.aspx

U.S. E.P.A. (2012). *Crop production*. Retrieved from U.S. Environmental Protection Agency. http://www.epa.gov/agriculture/ag101/printcrop.html

Von Crowder. (1997). A participatory approach to curriculum development. Sustainable Development Brief: Food and Agricultural Organizations of the United Nations.

Vygotsky, L. S. (1978). *Mind in society*. Cambridge, MA: Harvard University Press.

Warmbrod, J. R. (1968*). State policies for distributing state and federal funds for vocational education in agriculture to local school districts.* University of Illinois, Urbana.

Warner, J. W., Arnold, S., Jones, D. W., & Myers, B. E. (2006). The use and design of laboratory instruction in secondary agriscience classrooms. *Journal of Southern Agricultural Education Research, 56*(1), 125-135.

Wehlage, G. G., Newmann, F. M., & Secada, W. G. (1996). *Authentic achievement: Restructuring schools for intellectual quality.* San Francisco, CA: Jossey-Bass.

West, D., & Iverson, M. (1999). Economic impact of supervised agricultural experience program in Georgia. *Proceedings of the 26th Annual National Agricultural Education Research Conference, Orlando, FL*.

Willerman, B. & Swanson, L. (1953). Group prestige in voluntary organizations: A study of college sororities. *Human Relations,* 6, 55-77.

Woolfolk, A. (2010). *Educational psychology (11th ed.).* Columbus, OH: Pearson/Allyn & Bacon.

Woods, R. (2016). *Georgia performance standards (GPS).* Retrieved from the Georgia Department of Education. https://www.georgiastandards.org/Standards/Pages/BrowseStandards/BrowseGPS.aspx

Wozencrofte, A. J., Pate, J. R., & Griffiths, H. K. (2014). Experiential learning an its impact on students' attitude toward youth with disabilities. *Journal of Experiential Education, 38*(2), 129-143. doi: 10.1177/1053825914524363

Wulff-Risner, L., & Stewart, B. (1997). Using experiential learning to teach evaluation skills. *Journal of Agricultural Education, 38*(3), 43-50. doi: 10.5032/jae.1997.03043

Zilbert, E., & Leske, G. (1989). Agricultural education and experiential learning. *The Visistor, 76*(1), 1-4.

APPENDIX I
IRB APPROVAL

AUBURN UNIVERSITY INSTITUTIONAL REVIEW BOARD for RESEARCH INVOLVING HUMAN SUBJECTS

REQUEST FOR EXEMPT CATEGORY RESEARCH

For information or help completing this form, contact: **THE OFFICE OF RESEARCH COMPLIANCE**, 115 Ramsay Hall
Phone: 334-844-5966 **e-mail:** IRBAdmin@auburn.edu **Web Address:** http://www.auburn.edu/research/vpr/ohs/index.htm

Revised 2/1/2014 **Submit completed form to IRBsubmit@auburn.edu or 115 Ramsay Hall, Auburn University 36849.**

Form must be populated using Adobe Acrobat / Pro 9 or greater standalone program (do not fill out in browser). Hand written forms will not be accepted.

Project activities may not begin until you have received approval from the Auburn University IRB.

1. PROJECT PERSONNEL & TRAINING

PRINCIPAL INVESTIGATOR (PI):

Name David L. Chapman Jr. **Title** Graduate Student **Dept./School** Curriculum/Teaching

Address 130 Diamond Drive **AU Email** dlc0037@auburn.edu

Phone (678) 232-7509 **Dept. Head** David Virtue

FACULTY ADVISOR (if applicable):

Name James Lindner **Title** Advisor/Professor **Dept./School** Curriculum/Teaching

Address 5040 Haley Center

Phone (334) 844-6797 **AU Email** jrl0039@auburn.edu

KEY PERSONNEL: **List Key Personnel (other than PI and FA).** Additional personnel may be listed in an attachment.

Name	Title	Institution	Responsibilities

KEY PERSONNEL TRAINING: **Have all Key Personnel completed CITI Human Research Training (including elective modules related to this research) within the last 3 years?** ☐ **YES** ☐ **NO**

TRAINING CERTIFICATES: Please attach CITI completion certificates for all Key Personnel.

2. PROJECT INFORMATION

Title: Teacher perception of the Georgia middle school agricultural education curriculum and its effect on ~~secondary agricultural education enrollment.~~

Source of Funding: ☑ **Investigator** ☐ **Internal** ☐ **External**

List External Agency & Grant Number:

List any contractors, sub-contractors, or other entities associate with this project.

List any other IRBs associated with this project (including those involved with reviewing, deferring, or determinations).

FOR ORC OFFICE USE ONLY

DATE RECEIVED IN ORC: _____ by _____ **APPROVAL**
DATE OF IRB REVIEW: _____ by _____ **APPROVAL**
DATE OF ORC REVIEW: _____ by _____ **INTERVAL F**
DATE OF APPROVAL: _____ by _____
COMMENTS:

The Auburn University Institutional Review Board has approved this Document for use from 03/15/2017 to 03/14/2020
Protocol # 17-101 EX 1703

1 of 3

3. **PROJECT SUMMARY**

a. **Does the research involve any special populations?**

☐ YES	◉ NO	**Minors (under age 19)**
☐ YES	◉ NO	**Pregnant women, fetuses, or any products of conception**
☐ YES	◉ NO	**Prisoners or Wards**
☐ YES	◉ NO	**Individuals with compromised autonomy and/or decisional capacity**

b. **Does the research pose more than minimal risk to participants?** ☐ YES ◉ NO

Minimal risk means that the probability and magnitude of harm or discomfort anticipated in the research are not greater in and of themselves than those ordinarily encountered in daily life or during the performance of routine physical or psychological examinations or tests. 42 CFR 46.102(i)

c. **Does the study involve any of the following?**

☐ YES	◉ NO	**Procedures subject to FDA Regulation** Ex. Drugs, biological products, medical devices, etc.
☐ YES	◉ NO	**Use of school records of identifiable students or information from instructors about specific students**
☐ YES	◉ NO	**Protected health or medical information when there is a direct or indirect link that could identify the participant**
☐ YES	◉ NO	**Collection of sensitive aspects of the participant's own behavior, such as illegal conduct, drug use, sexual behavior or use of alcohol**
☐ YES	◉ NO	**Deception of participants**

If you checked "YES" to any response in Question #3 STOP. It is likely that your study does not meet the "EXEMPT" requirements. Please complete a PROTOCOL FORM for Expedited or Full Board Review.
You may contact IRB Administration for more information. (Phone: 334-844-5966 or Email: IRBAdmin@auburn.edu)

4. **PROJECT DESCRIPTION**

a. **Subject Population** (Describe, include age, special population characteristics, etc.)

The population for this study will include middle school agricultural education teachers in the State of Georgia. All participants will be over eighteen years old, with the probable age range being from twenty-two through sixty years old. All participants will be current in-service middle school agricultural educators at the time of the study.

b. **Describe, step by step, all procedures and methods that will be used to consent participants.**

☐ **N/A (Existing data will be used)**

All participants will receive an information letter for an electronic survey since an anonymous electronic survey will be utilized for this study, which only includes participants over eighteen years of age. Participants will also receive an email invitation for on-line survey with the information letter as an attachment, along with contact information for follow-up questions.

c. **Brief summary of project.** (Include the research question(s) and a brief description of the methodology, including recruitment and how data will be collected and protected.)

This study will be conducted to determine teacher perception of the Georgia middle school agricultural education standards and program experiences and the level to which they influence secondary enrollment in agricultural education. This study will also be used to evaluate the curriculum by determining teacher perception of the importance and level of competence amongst middle school agricultural education students upon completion of the program. The purpose of this study is to evaluate the middle school agricultural education curriculum to ensure that it is meeting the changing needs of the modern student. The data collected in this study will assist in strengthening middle school agricultural education programs and gaining a better understanding of the role of middle school programs and their affect on matriculation. Participants will be asked to complete an anonymous two-part online questionnaire that will be used to determine teacher perception of the Georgia middle school agricultural education curriculum. All state standards will be presented in the questionnaire, along with experiences in FFA and Supervised Agricultural Experience Programs as it pertains to the three components of agricultural education provided to middle school students. Participants will be randomly selected from the population of all middle school agricultural educators in Georgia. The individuals within the sample will then be contacted and recruited for participation within the study. Participants will be recruited through the utilization of the email invitation for on-line surveys. Communication with participants will be established through email and all participants will be provided with an information letter for electronic surveys. This will provide the participant with necessary information regarding the study and their role in the data collection process. Any data obtained in connection with this study will remain anonymous. We will protect the privacy of all participants and the data provided by not collecting email addresses or IP addresses through the questionnaire. Data will be secured, protected, and maintained utilizing the Qualtrics platform. There are no direct benefits, compensation, or costs associated with participation in this study. There are no anticipated risks or discomforts associated with participation in this study and participants can withdraw at any time by closing their browser window containing the online questionnaire. Participants will also be informed that once anonymous data has been submitted, that it cannot be withdrawn since it will be unidentifiable.

d. **Waivers. Check any waivers that apply and describe how the project meets the criteria for the waiver.**

- ☐ **Waiver of Consent (Including existing de-identified data)**
- ☑ **Waiver of Documentation of Consent (Use of Information Letter)**
- ☐ **Waiver of Parental Permission (for college students)**

Waiver of Documentation of Consent: An information letter will be used since an anonymous online questionnaire will be used to collect non-invasive and non-sensitive data from participants who are over eighteen years of age.

e. **Attachments.** Please attach Informed Consents, Information Letters, data collection instrument(s), advertisements/recruiting materials, or permission letters/site authorizations as appropriate.

Signature of Investigator David L. Chapman Jr. Date 1/13/17

Signature of Faculty Advisor James Lindner Date 2.22.17

Signature of Department Head [signature] Date 2.22.2017

APPENDIX II
EMAIL INVITATION

E-MAIL INVITATION FOR ON-LINE SURVEY

Dear Participant,

I am a graduate student in the Department of Curriculum and Teaching at Auburn University. I would like to invite you to participate in my research study to determine teacher perception of the Georgia middle school agricultural education standards and program experiences and the level to which they influence secondary enrollment in agricultural education. This study will also be used to evaluate the curriculum by determining teacher perception of the importance and level of competence amongst middle school agricultural education students upon completion of the program. The purpose of this study is to evaluate the middle school agricultural education curriculum to ensure that it is meeting the changing needs of the modern student. The data collected in this study will assist in strengthening middle school agricultural education programs and gaining a better understanding of the role of middle school programs and their affect on matriculation. You may participate if you are a middle school agricultural education teacher in the State of Georgia and are age eighteen or older.

Participants will be asked to complete an anonymous two-part online questionnaire that will determine your perception of the Georgia middle school agricultural education curriculum. All state standards will be presented in the questionnaire, along with experiences in FFA and Supervised Agricultural Experience Programs as it pertains to the three components of agricultural education provided to middle school students. Your total time commitment will be approximately ten to fifteen minutes.

There are no direct benefits, compensation, or costs associated with your participation in this study.

If you would like to know more information about this study, an information letter is attached to this email or you can contact me directly by email or phone. If you decide to participate after reading the letter, you can access the survey from the link below.

LINK TO SURVEY

If you have any questions, please contact me at dlc0037@auburn.edu (678) 232-7509 or my advisor, Dr. James Lindner, at jrl0039@auburn.edu (334) 844-4434.

Thank you for your consideration,

David Chapman
Graduate Student
Auburn University

APPENDIX III
INFORMATION LETTER

AUBURN
UNIVERSITY

5040 HALEY CENTER
AUBURN, AL 36849-5212

TELEPHONE:
334-844-4434

FAX:
334-844-6789

COLLEGE OF EDUCATION

CURRICULUM AND TEACHING

(NOTE: DO NOT AGREE TO PARTICIPATE UNLESS IRB APPROVAL INFORMATION WITH CURRENT DATES HAS BEEN ADDED TO THIS DOCUMENT.)

INFORMATION LETTER
for a Research Study entitled
" Teacher perception of the Georgia middle school agricultural education curriculum and its effect on secondary agricultural education enrollment "

You are invited to participate in a research study to determine teacher perception of the Georgia middle school agricultural education standards and program experiences and the level to which they influence secondary enrollment in agricultural education. This study will also be used to evaluate the curriculum by determining teacher perception of the importance and level of competence amongst middle school agricultural education students upon completion of the program. The purpose of this study is to evaluate the middle school agricultural education curriculum to ensure that it is meeting the changing needs of the modern student. The data collected in this study will assist in strengthening middle school agricultural education programs and gaining a better understanding of the role of middle school programs and their affect on matriculation. The study is being conducted by *David Chapman, Ph.D. Candidate,* under the direction of *Dr. James Lindner* in the Auburn University Department of Curriculum and Teaching. You are invited to participate because you are a middle school agricultural education teacher in the State of Georgia and are age eighteen or older.

What will be involved if you participate? Your participation is completely voluntary. If you decide to participate in this research study, you will be asked to complete an anonymous two-part online questionnaire that will determine your perception of the Georgia middle school agricultural education curriculum. All state standards will be presented in the questionnaire, along with experiences in FFA and Supervised Agricultural Experience Programs as it pertains to the three components of agricultural education provided to middle school students. Your total time commitment will be approximately ten to fifteen minutes.

Are there any risks or discomforts? There are no anticipated risks or discomforts associated with this study.

AUBURN
UNIVERSITY

5040 HALEY CENTER
AUBURN, AL 36849-5212

TELEPHONE:
334-844-4434

FAX:
334-844-6789

Are there any benefits to yourself or others? There are no direct benefits to you as a participant of this study other than your contribution to understanding the identified research question and objectives indicated above.

Will you receive compensation for participating? You will not receive any compensation for participation within this study.

Are there any costs? There are no costs associated with your participation in this study.

If you change your mind about participating, you can withdraw at any time by closing your browser window containing the online questionnaire. If you choose to withdraw, your data can be withdrawn as long as it is identifiable. Once you've submitted anonymous data, it cannot be withdrawn since it will be unidentifiable. Your decision about whether or not to participate or to stop participating will not jeopardize your future relations with Auburn University, the Department of Curriculum and Teaching or the College of Education.

Any data obtained in connection with this study will remain anonymous. We will protect your privacy and the data you provide by not collecting email addresses or IP addresses through the questionnaire. Data will be secured, protected, and maintained utilizing the Qualtrics platform. Information collected through your participation may be used by researchers, university faculty, and state agricultural education leadership for the continued growth and development of agricultural education programs. The data collected in this study may also be used for publications in professional journals and/or presentation at professional meetings for agricultural education research.

If you have questions about this study, please contact David Chapman at dlc0037@auburn.edu (678) 232-7509 or Dr. James Lindner at jrl0039@auburn.edu (334) 844-4434.

If you have questions about your rights as a research participant, you may contact the Auburn University Office of Research Compliance or the Institutional Review Board by phone (334) 844-5966 or e-mail at

AUBURN
UNIVERSITY

COLLEGE OF EDUCATION

CURRICULUM AND TEACHING

IRBadmin@auburn.edu or IRBChair@auburn.edu.

HAVING READ THE INFORMATION ABOVE, YOU MUST DECIDE IF YOU WANT TO PARTICIPATE IN THIS RESEARCH PROJECT. IF YOU DECIDE TO PARTICIPATE, PLEASE CLICK ON THE LINK BELOW. YOU MAY PRINT A COPY OF THIS LETTER TO KEEP.

David L. Chyung 2/13/17
Investigator Date

The Auburn University Institutional Review Board has approved this document for use from _____ to _____. Protocol #_____

LINK TO SURVEY

Add this approval information in sentence form to your electronic information letter!

The Auburn University Institutional Review Board has approved this Document for use from
03/15/2017 to 03/14/2020
Protocol # 17-101 EX 1703

5040 HALEY CENTER
AUBURN, AL 36849-5212

TELEPHONE:
334-844-4434

FAX:
334-844-6789

Appendix IV
RESEARCH QUESTIONNAIRE

Directions: For each of the following experiences, in the right hand column to

Questionnaire Directions *(Part 1)*: For each of the following experiences in middle school agriculture education programs, **please indicate the level of influence** that you believe each has on a student's decision to enroll in a high school agriculture education course **after eighth grade**. A ***positive influence*** indicates that the experience would make a student want to continue enrollment and a ***negative influence*** indicates that the experience would make a student not want to enroll in a high school course. Please mark ***no influence*** if you believe the experience does not have any influence upon a student's decision to enroll in a high school agriculture education course after middle school. **Please base your perception upon both your program *and* middle school agriculture education throughout the State of Georgia.**

Please indicate the level of influence that you believe each of the following experiences in midle school agriculture education has on a student's decision to enroll in a high school agriculture education course.

Classroom and Laboratory Experiences (based on Georgia State Standards)

	Level of Influence				
	Negative	Slightly Negative	No Influence	Slightly Positive	Positive
Learning how agriculture affects/impacts life.	O	O	O	O	O
Learning about the history of American agriculture.	O	O	O	O	O
Learning about agriculture in Georgia.	O	O	O	O	O
Learning about the Horticulture industry.	O	O	O	O	O

	Level of Influence				
	Negative	Slightly Negative	No Influence	Slightly Positive	Positive
Learning about Animal Science.	O	O	O	O	O
Learning about the opportunities available in the FFA.	O	O	O	O	O
Learning about agriscience.	O	O	O	O	O
Learning about forestry and natural resources.	O	O	O	O	O
Learning about agricultural careers.	O	O	O	O	O
Learning about agricultural mechanics.	O	O	O	O	O
Learning about leadership and communication.	O	O	O	O	O
Learning about work ethic and employability skills.	O	O	O	O	O
Learning about plant science.	O	O	O	O	O
Hands-on learning.	O	O	O	O	O
Educational experiences in the school greenhouse.	O	O	O	O	O
Educational experiences in the school livestock facility.	O	O	O	O	O
In-class laboratory experiences.	O	O	O	O	O
Outdoor laboratory experiences.	O	O	O	O	O
Making connections between academics and real-world situations.	O	O	O	O	O

FFA Experiences

	Level of Influence				
	Negative	Slightly Negative	No Influence	Slightly Positive	Positive
Being an FFA member.	O	O	O	O	O
Participating in leadership career development events.	O	O	O	O	O
Participating in animal science career development events.	O	O	O	O	O
Participating in plant science career development events.	O	O	O	O	O
Participating in wildlife and natural resources career development events.	O	O	O	O	O

	Level of Influence				
	Negative	Slightly Negative	No Influence	Slightly Positive	Positive
Participating in agricultural mechanics career development events.	O	O	O	O	O
Attending summer leadership conference (FFA Camp).	O	O	O	O	O
Attending FFA Conventions (State or National).	O	O	O	O	O
Attending FFA Conferences (Ex. Discovery Conference).	O	O	O	O	O
Attending chapter FFA meetings.	O	O	O	O	O
Serving as a chapter officer.	O	O	O	O	O
FFA sponsored community service projects.	O	O	O	O	O
Local FFA chapter socials.	O	O	O	O	O
Participating in FFA fundraising efforts.	O	O	O	O	O
Earning Discovery FFA Degree.	O	O	O	O	O

Supervised Agricultural Experiences (SAE)

	Level of Influence				
	Negative	Slightly Negative	No Influence	Slightly Positive	Positive
The student's supervised agricultural experience program (SAE).	O	O	O	O	O
Student's ability to make real-world connections through their SAE.	O	O	O	O	O
Hands-on learning through SAE program.	O	O	O	O	O
Learning record keeping skills through SAE program.	O	O	O	O	O
Raising/exhibiting livestock.	O	O	O	O	O
Earning money through SAE program.	O	O	O	O	O
Receiving recognition for their SAE program.	O	O	O	O	O
Learning to set goals through the completion of their SAE.	O	O	O	O	O
Learning new skills through the completion of their SAE.	O	O	O	O	O
Agriscience SAE programs.	O	O	O	O	O
Learning about various areas of agriculture that they find interesting through their SAE.	O	O	O	O	O

Overall, to what extent do you believe that experiences in middle school agriculture education influence a student's decision to enroll in a high school agriculture education course? Please move the dial on the line indicating the level of influence. ***Zero indicates no influence, and the scale represents an increase in influence from one to ten.***

Less Influence More Influence

0 1 2 3 4 5 6 7 8 9 10

Level of Influence

Questionnaire Directions *(Part 2)*: For each of the Georgia State Standards below, **please indicate the level of importance** that you would place on each standard *(on the left)* **and the level of student competence** among your students upon completion/mastery of that standard *(on the right)*. This section of the questionnaire will yield data on the discrepancy between "what is" vs "what should be" regarding the middle school curriculum which can then be used as an index of program effectiveness.

6th Grade Standards

Importance 1 Low 2 3 4 5 High		Student Competence 1 Low 2 3 4 5 High
O OOO O	MSAGED6-1: Students will demonstrate the importance of agriculture in daily life.	O OOO O
O OOO O	MSAGED6-2: Students will express an understanding of the history of American agri-culture.	O OOO O
O OOO O	MSAGED6-3: Students will state the importance of Georgia agriculture.	O OOO O
O OOO O	MSAGED6-4: Establish an understanding of Agricultural Education Programs.	O OOO O
O OOO O	MSAGED6-5: Express knowledge of the area of horticulture.	O OOO O
O OOO O	MSAGED6-6: Demonstrate an understanding of the area of animal science.	O OOO O
O OOO O	MSAGED6-7: Describe examples of careers clusters in agriculture.	O OOO O

7th Grade Standards

Importance						Student Competence					
1 Low	2	3	4	5 High		1 Low	2	3	4	5 High	
O	O	O	O	O	MSAGED7-1: Express the importance of agriculture in daily life.	O	O	O	O	O	
O	O	O	O	O	MSAGED7-2: Compare/contrast the importance of Georgia agriculture.	O	O	O	O	O	
O	O	O	O	O	MSAGED7-3: Demonstrate an understanding of the National FFA Organization.	O	O	O	O	O	
O	O	O	O	O	MSAGED7-4: Express an understanding of the area of agriscience.	O	O	O	O	O	
O	O	O	O	O	MSAGED7-5: Build an understanding of the area of forestry & natural resources.	O	O	O	O	O	
O	O	O	O	O	MSAGED7-6: Critique the area of agricultural mechanics.	O	O	O	O	O	

8th Grade Standards

Importance						Student Competence					
1 Low	2	3	4	5 High		1 Low	2	3	4	5 High	
O	O	O	O	O	MSAGED8-1: Identify the 3 main parts of the agricultural education program.	O	O	O	O	O	
O	O	O	O	O	MSAGED8-2: Develop an understanding of the FFA organization.	O	O	O	O	O	
O	O	O	O	O	MSAGED8-3: Develop leadership skills, characteristics, and responsibilities.	O	O	O	O	O	
O	O	O	O	O	MSAGED8-4: Develop and use verbal and nonverbal communication skills.	O	O	O	O	O	
O	O	O	O	O	MSAGED8-5: Develop work ethic and employable skills through agricultural education and leadership programs.	O	O	O	O	O	
O	O	O	O	O	MSAGED8-6: Students will define and explain the horticulture industry.	O	O	O	O	O	
O	O	O	O	O	MSAGED8-7: Students will identify plant parts and their functions.	O	O	O	O	O	
O	O	O	O	O	MSAGED8-8: Students will define methods of plant propagation either by sexual or asexual reproduction.	O	O	O	O	O	
O	O	O	O	O	MSAGED8-9: Students will identify plant growth requirements.	O	O	O	O	O	

Importance 1 Low	2	3	4	5 High		Student Competence 1 Low	2	3	4	5 High
O	O	O	O	O	MSAGED8-10: Students will define the forestry & natural resource industry.	O	O	O	O	O
O	O	O	O	O	MSAGED8-11: Students will identify the importance of the forest.	O	O	O	O	O
O	O	O	O	O	MSAGED8-12: Students will be able to classify and list examples of trees specific to our region.	O	O	O	O	O
O	O	O	O	O	MSAGED8-13: Students will explain the importance of conservation and preservation of natural resources.	O	O	O	O	O
O	O	O	O	O	MSAGED8-14: Student will be able to describe wildlife and their habitat.	O	O	O	O	O
O	O	O	O	O	MSAGED8-15: The students will identify the role of agriscience in meeting human needs.	O	O	O	O	O
O	O	O	O	O	MSAGED8-16: The student will identify current trends and issues relating to Agriscience.	O	O	O	O	O
O	O	O	O	O	MSAGED8-17: The student will demonstrate the application of agriscience in agricultural animal research and production.	O	O	O	O	O
O	O	O	O	O	MSAGED8-18: The student will demonstrate the application of agriscience in agricultural plant research and production.	O	O	O	O	O
O	O	O	O	O	MSAGED8-19: The student will identify various career clusters in the field of agriscience.	O	O	O	O	O

Please respond to the following...

Gender

O Male

O Female

Ethnicity

- ○ African American
- ○ Alaska Native/American Indian
- ○ Asian
- ○ Biracial/Multiracial
- ○ Caucasian/White
- ○ Hispanic/Latino
- ○ Other

Years of Teaching Experience

- ○ Less than 5
- ○ 5-10 years
- ○ 11-15 years
- ○ 16-20 years
- ○ 20-25 years
- ○ 26 + years

Community Setting

- ○ Rural
- ○ Urban
- ○ Suburban
- ○ Metropolitan

APPENDIX V
GEORGIA AGRICULTURAL EDUCATION PROGRAM MAP