Piloting the future of agriculture education: The educators' perspective of the Georgia Elementary Agriculture Pilot Program

by

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Abstract

This study had a purpose to review the grade level curriculum standards for the GEAPP and factors contributing to the program such as collaboration with community stakeholders and other existing Agriculture entities such as Middle School Agriculture Education and High School Agriculture Education Programs, the National FFA Organization chapters, County Farm Bureaus, and Extension/ 4-H. The research objectives included describing the grade levels being taught in the pilot program schools, describing the perceived importance of the current approved Georgia Department of Education Elementary Agriculture Pilot Program (GEAPP) curriculum standards, describing the educator's level of certification, as it pertains, to the endorsement created by the Georgia Professional Standards Commission and their desire to earn the Elementary Agriculture endorsement/certification, describing the educator's pathway to becoming an Elementary Agriculture Teacher, describing the pilot programs involvement with existing school-based agriculture education programs offered in the school system, describing the educators use of current available elementary agriculture resources, and describing stakeholder collaboration within the community of the pilot program. Participants within this study were current GEAPP teachers for the 2020-2021 school year.

This was a quantitative research study that utilized Qualtrics to deliver an internet based research survey. The conclusions of this study were third and fourth grade students are the top two grades taught in the EAPP. O significance was found based upon the data analysis for all grade levels and al standards. Most EAPP teachers are not certified or have the elementary agriculture endorsement. Teachers in the program entered teaching through traditional means. GEAPP schools are predominately found in counties with agriculture programs offered to all grade levels and with adult programs. Teachers are using the resources offered through the

GEAPP Google Drive folder and AITC. The majority of GEAPP have a relationship with stakeholders. A qualitative analysis of the grade level curriculum standards is recommended for further research. Further research needs to be conducted in the field of agriculture education for elementary students.

Dedication

This dissertation is dedicated to the people I love most. Simply, this paper and research would not have been possible without the love and support of my husband, Berry Dodson, and my mother, Jean Champagne. Thank you for believing in me when I did not always believe in myself but together, we did it!

Acknowledgements

Life is a funny thing. You end up on paths that you never imaged. At one point in my life, I would pick on my friends who were in school to be a teacher. I never thought that I would be a teacher, it was never in my plans. Now, I reflect on two decades in the classroom and find myself in awe of the path that the Lord put me on in both agriculture and education. I truly thank the Lord for having this plan for me and the fact that it included being a teacher. I do not have children of my own, but He blessed me with the opportunity to be a part of the lives of thousands of children that crossed the threshold of my classroom's door. Students are the driving force behind why I do what I do every single day. Agriculture is not just my passion but is truly a way of life for me and my family. I am truly honored and blessed to have this life and to be able to teach everyone about the role of agriculture in our country but more the impact to our daily lives.

This dissertation would not have been possible without the help of Dr. Lindsey Guyett. Thank you for being a listening ear, a voice of reason, and my technology support. You have been such a tremendous encouragement throughout this journey. I am so thankful to have you and your family in my life.

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When I was in just beginning my collegiate journey, no one would have ever convinced me that I would end up with six degrees culminating with a Ph.D. To anyone reading this, reach for the stars and never stop learning. You never know what you may accomplish.

Table of Contents

List of Tables

List of Abbreviations

AAAE	American Association for Agricultural Education
AITC	Ag in the Classroom
FFA	National FFA Organization
GEAPP	Georgia Elementary Agriculture Pilot Program
NCAE	National Council for Agriculture Education
NCLB	No Child Left Behind Act
NRC	National Research Council
SAE	Supervised Agricultural Experience projects
SBAE	School Based Agricultural Education
STEM	Science Technology Engineering Math

Chapter 1

Introduction

American agriculture has undergone a transformation. Thomas Jefferson observed centuries ago, “Agriculture is our wisest pursuit because it will in the end contribute most to real wealth, good morals, and happiness” (Brandt et al., 2017, p. 134). While the agricultural food, fiber, and natural resources system is the largest employer in America, the population is now three generations removed from the farm (American Farm Bureau, 2021). 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). With the exponential growth of the global population, expected to be nine billion people by 2050, the non-agriculture population has little to no understanding of the complexities involved in sustaining a viable agriculture system (Doerfort, 2011).

As the American economy, political culture, and society evolved from one centered around agrarian or industrial means to an economy driven by technological and service professions, fewer citizens see the value of attaining agriculture knowledge. These factors counterplay with other facets of daily life, making agriculture literacy one of the most important issues in America. Most individuals are 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 impact requires individuals a need for basic literacy of the human designed agri-food system (Hess et al., 2011).

Agriculture education traditionally takes place at the secondary and post-secondary levels. There is a growing indication there is a need for an early exposure to agriculture education. This early exposure would include a wide variety of learning activities representing all facets of an expanded definition of agricultural and natural resources education (Trotter,

1977). Agriculture educators have discussed the need for instruction in agriculture in elementary grades curriculum for decades (Knobloch & Martin, 2000). 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 role that everyone places as an active consumer and participant in the food and fiber industry (Helsel & Hughes, 1984). 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 (Chapman, 2017).

Agriculture provides a major prospective context for learning in today's schools and classrooms. Educators contend that agriculture literacy requires one to possess an understanding of the agri-food system and the ability to engage in conversations about the agri-food system (National Council for Agricultural Education, 1999). In 1988, the National Research Council recommended that "beginning in kindergarten and continuing through twelfth grade, all students should receive some systematic instruction about agriculture" (National Research Council, 1988, pg. 2). The National Council for Agriculture Education (1999) also stated:

> Agricultural education envisions a world where all people value and understand the vital role of agricultural food, fiber, and natural resources systems in advancing personal and global well-being and that agricultural education prepares students for successful careers and a lifetime of informed choices in the global agricultural, food, fiber, and natural resources systems. (p. 13)

This lack of agricultural literacy must be overcome to protect the integrity of the agriculture industry as well as establish a population of well-informed consumers (Chapman, 2017). A focus on agriculture education at the elementary level is designed to establish widespread agricultural literacy across the country.

Agricultural education programs and students involved in agricultural activities through organizations like the National FFA Organization and 4-H continue to grow across the country. The agriculture experiences students have within these organizations become an avenue to increase agriculture literacy. However, 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 (Chapman, 2017). Programs must gain a better understanding of how to attract students to this type of educational experience and to effectively design an agriculture curriculum to facilitate enthusiasm and a positive learning environment. 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 agri-food systems by achieving the goal of widespread agricultural literacy (Chapman, 2017).

Agricultural education provides students with educational experiences aimed at increasing agricultural literacy and providing students with the opportunity to explore the many careers within the agriculture industry (Faulkner et al., 2006). These experiences are of utmost 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). The future of education in agriculture is dependent upon a steady supply of young people interested in agriculture and natural resources (Chapman, 2017). It is believed that children of future generations will be making career decisions at earlier ages than ever before due to the nature of education and the areas in which they are interested in studying (Nelson & Owings, 1974).

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 et al., 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 et al., 2006). Career exploration is beneficial for the future of the student and the agriculture industry (Faulkner et al., 2006).

Agricultural education programs and students involved in agricultural activities through the FFA 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 during their middle and high school years. This educational experience in agriculture would help to address the issue of agricultural literacy that currently faces todays agriculture industry. 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 to be interested in these programs and choose to take this curriculum. The methods that are utilized to teach students about agriculture have a significant influence upon their attitude toward learning the material (Okiror et al., 2011). It is 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 strive to accommodate modern students while focusing on the spread of agricultural literacy.

The passage of the Smith-Hughes Act in 1917 provided structure and funding for agriculture programs at the secondary level (Chapman, 2017). The National FFA Organization formally introduced middle school agricultural education during the National Convention of 1988 (Rossetti et al., 1994). Middle school agricultural education programs are some of the

earliest forms of formal instruction in agriculture that a student can receive in the United States within the public school system.

In 2018, the Georgia Agriculture Education Act was unanimously passed and entered law formalizing that agricultural education could be provided from kindergarten through twelfth grade (Georgia Agricultural Education, 2021). Legislators and agricultural educators realized that the formal classroom setting is a way to create a positive learning environment that promotes agriculture literacy (Georgia Agricultural Education, 2021). Georgia Senate Bill 330 (S. B. 330) was passed unanimously in both the house and the senate.

> To provide that the agricultural education program in this state is based on a three-component model; to provide for a pilot program to develop and implement agricultural education in elementary schools; to provide for selection of pilot sites; to provide for program requirements; to provide for a program evaluation; to provide for the Professional Standards Commission to extend in-field certification for agricultural education to include kindergarten. (p. 2)

The passage had a profound impact on agriculture education by expanding the current middle and high school programs with the establishment of an elementary agriculture pilot program. The Georgia Elementary Agriculture Pilot Program (GEAPP) was the first of its kind program in the United States and perhaps the globe. The legislation provided for one year of kindergarten through fifth grade curriculum development and selection of pilot schools for the 2018-2019 school year. 2019-2020 was the first year that the curriculum was formerly implementation in elementary agriculture pilot programs in select schools throughout the state.

Problem Statement

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 et al., 1996). This is critical to the future success of all students regardless of their future career or educational goals.

The solution to this problem is critical in the advancement of agricultural education and the research initiatives established by American Association for Agricultural Education for over a decade (Doerfert, 2011; Edgar et al., 2016). This study assists in the solution to research priority number four which is meaningful, engaged learning in all environments (Edgar et al., 2016). More specifically, this study focuses on the solution to the research 11 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).

The Georgia Elementary Agriculture Pilot Program (GEAPP) curriculum standards were created by a task force of elementary and agriculture teachers. The task force met several times over the 2018-2019 school year to construct the academic curriculum standards for kindergarten through fifth grade. Grade level elementary standards were evaluated from the core academic areas: English/Language Arts, Social Studies, and Science. Agriculture teachers assigned to a respective grade level assisted the groups in giving an agricultural approach to the existing Georgia Performance Standards for academic content. Thus, allowing the agricultural education curriculum standards to further reinforce the existing academic standards to be another tool to

help drive the improvement standardized test scores along with exposing students to agricultural education content, improving agricultural literacy at the same time.

After two years of implementation, it is critical to review the GEAPP curriculum standards as the pilot program enters its final year. This is a necessary area for research in agricultural education specifically as it pertains to future growth and development of the elementary agricultural education program. The findings of this study can also be used by other states to meet the needs of their students, as interest has been shown to pass similar legislation and develop elementary agriculture programs around the country.

Purpose and Objectives

The purpose of this study was to review the grade level curriculum standards for the GEAPP and factors contributing to the program such as collaboration with community stakeholders and other existing Agriculture entities such as Middle School Agriculture Education and High School Agriculture Education Programs, the National FFA Organization chapters, County Farm Bureaus, and Extension/ 4-H. Seven research objectives were used to guide the study:

1. Describe the grade levels being taught in the pilot program schools.
2. Describe the perceived importance of the current approved Georgia Department of Education Elementary Agriculture Pilot Program (GEAPP) curriculum standards.
3. Describe the educator's level of certification, as it pertains, to the endorsement created by the Georgia Professional Standards Commission and their desire to earn the Elementary Agriculture endorsement/certification.
4. Describe the educator's pathway to becoming an Elementary Agriculture Teacher.

5. Describe the pilot programs involvement with existing school-based agriculture education programs offered in the school system.
6. Describe the educators use of current available elementary agriculture resources.
7. Describe stakeholder collaboration within the community of the pilot program.

The research objectives provided the data necessary to gain a better understanding of the current state of the GEAPP and recommendations to improve the program as it moves forward.

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, 2021a). 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 entire agriculture industry. 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.

Agriculture has a tremendous impact on Georgia's economy providing approximately $73.35 billion each year (Georgia Farm Bureau, 2021). Agriculture is also the leading employer within the state of Georgia with one in seven individuals working within the field in some capacity (Georgia Farm Bureau, 2021). 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, 2021). 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. As the top employer in Georgia, it is imperative that students understand the role that agriculture has on their life and their future as well as the economy of the state and country.

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 (Roberts et al., 2016). This is a group of faculty and graduate students who conduct social science research within the context of food, agriculture, and natural resources (Roberts et al., 2016). 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 (Roberts et al., 2016). These priorities serve as the current research agenda for agricultural education and 21 should guide research strategies and practices for the given years (Roberts et al., 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 et al., 2016). Furthermore, this study focuses on the AAAE research priority and question to focus the study's questions and determine the educational needs and desires of students currently enrolled in elementary agriculture education programs in Georgia. The primary AAAE research

question used to help frame this study is “How can delivery of educational programs in agriculture continually evolve to meet the needs and interests of students?” (Edgar et al., 2016, p. 39).

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 are essential for the future success of agricultural education.

Definition of Terms

1. Agricultural Education: the process of teaching students about agriculture, food, and natural resources. Comprised of three interconnected facets: classroom/laboratory instruction, experiential learning, and leadership education (Croom et al., 2014).
2. Agricultural literacy: “possessing knowledge and understanding of our food and fiber system. An individual possessing such knowledge would be able to synthesize, analyze, and communicate basic information about agriculture. Basic agricultural information includes: the production of plant and animal products, the economic impact of

agriculture, its societal significance, agriculture's important relationship with natural resources and the environment, the processing and marketing of agricultural products, public agricultural policies, the global significance of agriculture, and the distribution of agricultural products" (Frick et al., 1991).

3. 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 et al., 2016).
4. 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 24 should guide research strategies and practices for the given years outlined by the agenda (Roberts et al., 2016).
5. 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).
6. Elementary Agricultural Education: sect of agricultural education established in Georgia as a result of SB330, following developed elementary agricultural education standards developed by the Georgia Department of Education (S. B. 330, 2018).
7. Elementary Agricultural Education Teacher: teacher that follows the elementary agricultural education standards developed by the Georgia Department of education.

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. 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).
10. National FFA Organization FFA: (formerly known as Future Farmers of America) An intra-curricular educational experience for students in grades sixth through eighth that 25 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, 2021b).
11. Pilot Program: A pilot project is an initial small-scale implementation that is used to prove the viability of a project idea. This could involve either the exploration of a novel new approach or idea or the application of a standard approach recommended by outside parties, but which is new to the organization.
12. Post-secondary Education: a continuation of study after high school which equips you with specific career-oriented skills that enables you to find a niche specific career as you have strong knowledge in that particular area. Post-secondary education is the kind of education beyond the scope of a high school education. Post-secondary education is being offered in universities, seminaries, colleges as well as institutes of technology.

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).

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 educators in the Georgia Elementary Agriculture Pilot Programs (GEAPP) and teach according to the Georgia curriculum. This limits the findings of this study to teachers within the pilot programs; however, the same methods and instrument design can be used in other states.

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 akin 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 were teachers in the GEAPP. This was addressed by selecting participating schools for the current academic year.

The researcher assumes that the sample drawn for this study was an accurate reflection of the entire population under study. 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 (Chapman, 2017). This study focused on the GEAPP curriculum and a

review of its standards based on current teacher perceptions. It further studies the current GEAPP teacher's pathway to becoming a teacher in the program and their certification and their desire to earn the elementary agriculture certification/endorsement. Adequate resources are critical to the success of curriculum standards. This study also looks at the teachers use of the current resources for the GEAPP teachers, as well as their involvement with agriculture education stakeholders.

Chapter 2

Review of Literature

History of Agriculture Education

From the beginning of recorded history, learning from others has been at the forefront of the minds of those who created an intellectual agenda (Siegel, 2018). In Ancient Greece, Socrates developed the Socratic Method of Questioning and began a tradition of reasoning that would justify beliefs, judgements, and actions. Those fundamental concepts are relevant today and gave rise to the view that education should be encouraged in all students and persons to the greatest extent possible (Siegel, 2018). Across the globe, in every culture, agricultural wisdom was passed from one generation to the next, thousands of years before the formation of formal education by Greek philosophers such as Aristotle, Socrates, and Plato.

Native Americans were farming in the Americas as early as 5,000 BC (Croom et al., 2014). They developed a sophisticated system of Agriculture focusing on the production of vegetables and grains. Tribal elders taught their youth how to cultivate these crops and this knowledge was passed down orally for many generations. When the first European colonists reached America, the Native Americans passed on their ancestorial knowledge of cultivation and best practices to produce maximum yields. Colonists were dependent upon raising their own crops for survival. As time progressed, Agriculture became a means to improve the quality of life for the colonists. The efforts to expand colonization were fueled by economic growth.

As the importance of Agriculture grew in the New World, so did the need for training. Agriculture societies were formed to promote and develop interest in new farming methods (Croom et al., 2014). The Philadelphia Society for Promoting Agriculture was established in 1785 and one soon followed in 1792 in Massachusetts (Croom et al., 2014). The idea for these organized societies was anchored in European society and traditions as with The Edinburgh

Society of Improvers in the Knowledge of Agriculture being established in 1723 (Croom et al., 2014). Another society was formed in England in 1754 and the first school of veterinary medicine was established in 1766 in France (Croom et al., 2014). American Agriculture Education is derived from the development of agricultural colleges in Scotland, Italy, and German, (Academic room, 2018).

The rapid growth of the agriculture industry led to the formation and expansion of Agriculture Education in 19th century America (Martinez, 2007). The touchstones of this evolution can be seen by the various forms of federal legislations that have been passed to support and develop Career & Technical Education (Martinez, 2007). Agriculture Education courses began to be formulated between 1825 and 1850, especially at the college level (Ramstad, 2014). 1854 saw the foundation of Farmers High School in Pennsylvania (Hillison, 1986).

As the United States found itself in the throes of the Civil War, 1862 started a trend of positive changes for agriculture as the Department of Agriculture was founded and the Morrill Act was passed, establishing land grant universities funded from the proceeds of federal land sales (Croom et al., 2014). In 1887, the Hatch Act was passed establishing experiment stations at land grant universities (Croom et al., 2014). In 1890, the first dairy school was founded at the University of Wisconsin-Madison (Academic room, 2018).

The progressive thinking of legislators and President Abraham Lincoln helped thrust agricultural education forward. At the turn of the 20th century, large numbers of students were dropping out of high school (Boone et al., 1987). This trend burdened the conscious of Rufus Stimson, an Agriculture Education pioneer. Stimson was born in Massachusetts and graduated from Harvard and Yale (Croom et al., 2014). As the President of the Connecticut Agriculture College, he became concerned on how Agriculture was being taught (Croom et al., 2014). At that

time, Agriculture was taught through classroom lecture, recitation, and manual labor on the school farm (Croom et al., 2014). Stimson was against these methods because there were too many students standing around watching and not engaged in the activity (Croom et al., 2014). He knew that it was not an ideal situation to go to do work on someone else's farm (Croom et al., 2014). He began to formulate ideas on new teaching methods to help keep students engaged and ultimately develop a project method for individual instruction (Croom et al., 2014).

Agricultural education has long been intertwined with project-based learning. The early days of agricultural education were guided through project-based farms, which paved the way for the passage of federal legislation forever linking project-based learning and secondary agricultural education (Smith & Rayfield, 2016). Rufus Stimson's project method has made a "profound impact on the vocational education profession" (Moore, 1988, p.51). The project method laid the groundwork for what early agricultural educators believed the Supervised Agricultural Experience (SAE) should be within the realm of formalized agricultural education.

In President Roosevelts 1907 State of the Union Address, he urged school reform by saying:

> Our school system is gravely defective in so far as it puts a premium upon mere literary training and tends therefore to train the boy away from the farm and the workshop. Nothing is more needed than the best type of industrial school, the school for mechanical industries in the city, the school for practically teaching agriculture in the country. (Smith & Rayfield, 2017)

Roosevelt's statement served as a catalyst to an already mobile educational movement, away from abstract academics toward applied and vocational training (Smith & Rayfield, 2017). Vocational education in secondary schools became a topic of interest for educational

policymakers, primarily for those who were looking for a workforce of highly qualified employees.

In 1914, the Smith-Lever Act helped to create the Cooperative Extension service which established a partnership between the land grant colleges and the federal government for the purpose of extending knowledge of best practices in agriculture (Croom et al., 2014). In 1917, the Smith-Hughes Act was passed, a landmark in the advancement of vocational education (Croom et al., 2014). It created the Federal Board for Vocational Education for the promotion of training in agriculture in secondary school (Croom et al., 2014). The Smith-Hughes Act included a provision that students were required to have a supervised farm practice based on his Project Method (Croom et al., 2014). Soon after Woodlawn High School, a public high school for Agriculture, began in Virginia (National FFA, 2021b). It is no surprise that four farm boys from Virginia began the Future Farmers of Virginia and by 1928 it became the Future Farmers of America (National FFA, 2021b). The National FFA Organization, as we know it today, is the nation's largest student organization and another part of the three-circle model of Agriculture Education (National FFA, 2021b).

This concept also caught the eye of state education leaders, including Charles Prosser, the architect behind the Smith-Hughes Act (Gadell, 1972). Prosser was a progressive educationalist who is considered by many as the single most influential person in the development of Vocational Education (Gadell, 1972). He criticized the traditional high school curriculum that was based on scholarship and college preparation (Gadell, 1972). Prosser noted that after the sixth grade, education should be differentiated because of a marked difference in interests, aptitudes, and occupational opportunities that were open to the young (Gadell, 1972). He felt the great majority of pupils needed vocational education (Gadell, 1972).

John Dewey, an educational theorist, enlisted the help of American horticulturalist and botanist, Liberty Hyde Bailey, to create the nature study movement (Schmidt, 2014). There was a movement as individuals saw the need for a natural, science-based, hands on approach to Vocational Education. In 1925, Charles Prosser and C. Allen published *Vocational Education in a Democracy* (Martinez, 2007). It contained 16 Theorems for Vocational Education (Martinez, 2007). They served as guidelines for the design, development, and implementation of Vocational Education. The theorems centered around work environment, industry standards, work habits, individual needs, electives, gainful employment, craftsperson teachers, performance standards, industry needs, actual jobs, content from occupation, specific job training, group needs, group characteristics, dual administration, and program standards (Martinez, 2007).

After the Great Depression, President Franklin D. Roosevelt appointed a Russell Committee to evaluate the effectiveness of Vocational Education (Martinez, 2007). The Russell Committee's findings came out in a 1938 report. It criticized Vocational Education for being too job specific, had a narrow perspective, and had an inflexibility in job opportunities (Martinez, 2007). World War II soon followed causing a resurgence in the need for specialized jobs that could support the war effort (Martinez, 2007). The social revolution of the 1960's brought significant changes to women's and civil rights (Martinez, 2007). The Vocational Act of 1963 was passed to ensure that persons of all ages, in all communities, would have access to high quality vocational training (Martinez, 2007).

Yet, minorities, including African Americans had already had an impact on Agriculture Education. In 1906, Booker T. Washington developed a program where he traveled throughout the South to advocate the importance of Agriculture as an industry (Frantz, 1997). During his tenure at Tuskegee University, he extended on campus programs to adults as an extension of

Agriculture Education (Frantz, 1997). The New Farmers of America had been established in the South as an organization for African American males that paralleled the Future Farmers of America (Frantz, 1997). As segregation was ending in the United States, the New Farmers of America merged with the Future Farmers of America, allowing all male students to be in the same organization (Frantz, 1997; National FFA, 2021b). However, prejudice and separation remained until 1969 when female students were officially welcomed full membership to the Future Farmers of America (Frantz, 1997; National FFA, 2021b).

Progress continued for inclusion into the 1970s as a multitude of amendments were passed to bring equality to education. *Title II and Title IX of the Educational Amendments*, passed in 1972, removed discrimination, sex bias, and stereotyping for females in educational settings (Knight, 1987; Foster, 2001; Baxter, 2009). Vocational Amendments were passed in 1976 as a continual effort to combat discrimination and stereotyping of school programs (Croom et al., 2014). The 1980s and 1990s ushered in educational reform with the passage of multiple Vocational Acts, many sponsored by Carl Perkins of Kentucky (Croom et al., 2014). It increased federal funding and expanded Agriculture Education to include careers beyond the farm in areas such as marketing, horticulture, agribusiness, and natural resources (Croom et al., 2014). However, the Act passed in 1963 had a negative impact largely to Supervised Agricultural Experiences (SAEs) (Croom et al., 2014). Unfortunately, some states chose to lessen its value or remove SAEs from the entire program (Croom et al., 2014). It also removed the roles of state Agriculture Education staff (Croom et al., 2014). The negative effects within the Agriculture Education programs were quickly rectified with the Act amendments passed in 1968 and 1976 (Croom et al., 2014).

As the century came to a close, the Carl D. Perkins Vocational Act of 1990 reauthorized funding for Vocational Education and focused heavily on curriculum and articulation agreements with post-secondary schools (Croom et al., 2014). The new millennium found President George W. Bush signing into law what we commonly refer to as the No Child Left Behind Act (NCLB) of 2002 (Croom et al., 2014). The main focus of the NCLB Act focuses on achievement scores, many educators felt it was potentially harmful to Agriculture Education (Croom et al., 2014). The latest revision of the Carl D. Perkins Vocational Act occurred in 2006 (Croom et al., 2014). It emphasized student academic achievement and provided funding to increase and enhance local and state measures of continuous improvement and then transition from vocational education to a newly coined phrase of "career and technical education" as these courses focus on more than just traditional job training (Croom et al., 2014). Agriculture Education now found itself under the umbrella of Career and Technical Education (Croom et al., 2014).

Philosophies that Shaped Agriculture Education

Formal, public education was at the forefront of American legislature at the begin of the 20th century (Croom et al., 2014). As educators began to formulate their own opinions of teaching styles and developing philosophies, a great debate began between Charles Prosser and another pioneer, John Dewey (Croom et al., 2014). Dewey was a philosopher, psychologist, and educational reformer (Croom et al., 2014). He was fueled by the works of Peirce and James (Croom et al., 2014). While Prosser and Dewey did agree that human beings learn through hands-on methods, they differed greatly on their view on how Agriculture Education, or Vocational Education as it was known at the time, should be taught (Croom et al., 2014). While Prosser felt certain students were best suited for certain kinds of education, John Dewey

advocated for democratic humanism that Vocational Education is needed for all students (Croom et al., 2014).

According to Doolittle and Camp (1999), since the late 1800's, three learning theory metaphors dominated education. Behaviorism which is learning as the acquisition of stimulus-response pairs (Doolittle & Camp, 1999). Information processing which is learning as the processing of information and constructivism which is learning as the construction of knowledge (Doolittle & Camp, 1999). These changes in explanatory metaphors have resulted from, and have allowed for, new insights concerning the nature of learning and knowledge (Doolittle & Camp, 1999). Researchers began to see that complex learning was difficult. Computers and increased technology began to enter academic consciousness and the information processing theory emerged (Doolittle & Camp, 1999). After years of research, constructivism emerged as it became apparent that context and culture influenced learning.

Philosophies of education were changing during the same time period as agriculture education was planting its roots (Martinez, 2007). The rise of Progressive Education became popular and centered around four tenets (Martinez, 2007). The first was that student's needs and interests should guide curriculum (Martinez, 2007). The second was that student activity, rather than memorization, should be the basis of student learning (Martinez, 2007). Third, social conditions should be included in the purpose of schooling and lastly, the primary objectives of schooling should be that it contributes to social problems (Martinez, 2007). These tenets reflected a Pragmatic Philosophy where utility or usefulness and practicality were paramount.

A great debate was held regarding the philosophical basis from which public vocational education should be developed (Martinez, 2007). Charles Prosser promoted a philosophy that valued a view of appropriate "fit" between certain types of students and certain types of

education (Croom et al., 2014; Martinez, 2007). The academically inclined students were best suited to a classic academic curriculum while those who were not were best suited for a vocational curriculum (Martinez, 2007). This led to a world in which vocational education was separated from academic education (Martinez, 2007). John Dewey noted that vocational education was needed for all students rather than for certain students and the objective was to teach subjects through vocations rather than teach a vocation (Croom et al., 2014; Martinez, 2007). Dewey supported the integration of the academic and vocational curriculum to affirm the dignity of work, stress problem solving, expand students' views of the world, and create a deep understanding of the role of work in students' lives (Croom et al., 2014; Martinez, 2007)

History of Elementary Agriculture Education

The teaching of agriculture traditionally has taken place at the secondary and post-secondary level with little, if any emphasis on the early years of students (Trotter, 1977). However, Bricker (1914) noted that enthusiasm for the study and teaching of elementary agriculture began early in the 20th century (Hillison, 1986). One popular way to teach agriculture in elementary schools was through nature study. It was a practical and interesting way to educate both rural and urban children at the time.

True (1897) predicted that "nature teaching," as taught at Cornell, would soon become a great success. He noted:

> The ordinary child, whether on the farm or in town, actually sees comparatively little in the world about him. The wonders of the trees and plants in a park, meadow, of birds and insects flying about the house, float like shadowy visions before his eyes. Seeing, he sees not. (p.286).

It became so popular that by 1905, the United States Department of Agriculture issued a circular that listed over 100 books, periodicals, and other references as possible sources of information for the elementary agriculture teacher (Hillison, 1986). However, the nature study program and elementary agriculture did have critics, especially from the people in establishment-oriented agriculture (Hillison, 1986). Davenport, Dean of the College of Agriculture, at the University of Illinois is quoted as saying:

> When I speak of teaching agriculture in our high schools, I mean agriculture. I do not mean nature study, nor do I mean some sort of pedagogical kink should be given to chemistry or botany or even geography and arithmetic. Let these arts and sciences be taught from their own standpoint, with as direct application to as many affairs of real life as possible; but let chemistry continue to be chemistry; let agriculture introduce new matter into the schools and with it a new point of view. Nor should this new matter be "elementary agriculture." In some ways I wish the phrase had never been coined. What is wanted in our high schools is not elementary agriculture, but elemental, fundamental agriculture. (Davenport, 1908, p.17)

The focus was on true agriculture production and practices, not just the nature found around an individual in their daily life.

The ability of the elementary school child to productively study in-depth concepts, such as agriculture, has been questioned (Nelson & Owings, 1974). There is also a question about whether or not value formation has taken place at an elementary age level (Nelson & Owings, 1974). In a study by Wellington and Olechowksi (1966), the focus of the research was to determine if primary grade school children could realistically gain awareness important to vocational attitude and value formation, found that children did discover that jobs have

advantages and that one's interests have something to do with the enjoyment of what he does (Nelson & Owings, 1974). A study based on data from boys and girls in the fourth grade, by Tyler (1955), found results that strongly suggest the patterned interests develop through the acquisition of dislikes by individuals whose initial attitude has been favorable toward everything, not through the emergence of both likes and dislikes on a neutral ground. Hales and Fenner (1972) did a study of work value orientation concluding that the development of values related to work is usually underway for most children by the fifth grade. Cooker (1973) observed that children as early as fourth grade select vocational order. It can be concluded from the above studies that decisions, such as vocational interest, are taking place in younger children.

Agricultural Literacy

Agriculture Education is evolving to include multiple roles within the American school house as educators are now focusing on the twenty-first century and beyond. Agriculture is the largest industry in the United States with twenty percent of the workforce tied to agricultural means in some capacity. While a skilled labor force is critical for meeting the demands of industry and technology, while Agriculture Literacy is now becoming a crucial area of Agriculture Education, not just a focus on agriculture production. Less than two percent of the population within the United States is employed in production Agriculture (Kovar & Ball, 2013). People are so far removed from the farm that many are unaware of how food is produced and transported to outlets like grocery stores (Kovar & Ball, 2013). Not only does Agriculture Education have the task of helping to create a skilled workforce but it also must educate the masses on food production and (Kovar & Ball, 2013).

There is a growing indication that agricultural educators are perceiving a need for an early exposure for all children (Kovar & Ball, 2013; Chapman, 2017). This early exposure

includes a wide variety of learning activities representing all facets of an expanded definition of agricultural and natural resources education (Kovar & Ball, 2013; Chapman, 2017). 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; Chapman, 2017). Agricultural education as an entity has 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 et al., 2003). Elementary agriculture programs have the potential to spark an interest and understanding of the many facets of the agriculture industry (Georgia Agricultural Education). Enrollment in agricultural education classes is an essential component of being able to effectively address the agricultural literacy issues across the United States (Chapman, 2017).

By 2050, it is projected that nine billion people will inhabit the planet, exponentially increasing the need for food and other agriculturally based products to sustain human life (Doerfert, 2011). Addressing these immense challenges will require the development of new, innovative, and environmentally friendly agricultural methods and technologies. This will require investments in agricultural research and education, and recruitment of students educated in science, technology, engineering, and math (STEM) into the agricultural workforce (Handlesman & Stulberg, 2016). These challenges are amplified by a workforce insufficient to meet the needs of the food and agriculture sectors in the United States. A multitude of challenges facing agri-food production can be addressed by educating a new generation of agricultural professionals (Handlesman & Stulberg, 2016).

Achieving this goal will require recruiting students already interested in the agriculture industry and those who could be drawn to enter the agricultural related field with the promise of meaningful employment (Handlesman & Stulberg, 2016). By engaging outstanding, diverse, agriculture students and providing them with excellent training, the United States could meet its need for new, innovative approaches to addressing the complex challenges of securing a sustainable food supply and agricultural industry (Handlesman & Stulberg, 2016). It could potentially meet agricultural workforce needs in the public and private sectors (Chapman, 2017; Handlesman & Stulberg, 2016). Federal agencies, private-sector foundations, trade associations, companies, commodity organizations, universities and colleges, and others can foster a modern system of agricultural research and training that places special emphasis on the key challenges of our time (Handlesman & Stulberg, 2016).

With the focus on meeting the challenge of a finding competently trained employees for agricultural careers, there have been many solutions posited by professionals already in the field. Peterson (1969) states

> Certainly, we in agriculture education have a responsibility of highest priority to bring an understanding and appreciation of the role of agriculture in our lives. At the least, there should be a real effort to give elementary and junior high students a chance to understand something of the source of their daily bread- to say nothing of their latest sweater fad. (p. 10)

Snowden and Shoemake (1977) furthered this notion by stating:

> To make the elementary child aware of agriculture and the many things of the natural environment is to teach him the care of things; to show him in some measure that there are many things that affect his life; and to make him aware that practically everything he

enjoys comes from work from someone. There is no sounder way of making elementary school children aware of nature than that provided by agriculture instruction. (p. 149)

The National Research Council (1988) asserted that agriculture is too important to be taught to only students in a vocational education course and urged more agriculture to be taught in schools. In 1999, members within the National Research Council suggested all teachers in all schools must include the study of agriculture in a relevant integrated and instructional approach for all students to achieve conversational literacy in agricultural, food, fiber and natural resources systems (National Research Council, 2009).

Ag in the Classroom

1915 found twenty-one states that required agricultural instruction in rural elementary schools (Herren & Oakley, 1995). Many schools followed the teaching of Pestalozzi and used hands-on activities such as school gardens (Herren & Oakley, 1995). Schools were successful in integrating agricultural concepts into the academic areas of literature, mathematics, art, and science (Herren & Oakley, 1995). Nature study was another method used to teach elementary aged students about agricultural concepts (Herren & Oakley, 1995). In the early 1980's former secretary of Agriculture, John Block, advocated for the use of agriculture as a teaching medium in elementary schools for a program called Agriculture in the Classroom (Hillison, 1998). Hillison (1998) research found that Garland Bricker (1911) reported on the popularity of agriculture education seventy years earlier. Secretary Block made a push for agriculture education again stating "it was one thing to mandate instruction of agriculture in elementary schools, but it was something else to develop a curriculum and the activities that could go with that curriculum" (Hillison, 1998, p. 11).

The role of the classroom teacher has shifted from one where the educator served as the sole source of content knowledge for student to one in which the educator facilitates education experiences that comprise the entire learning process for students within a structured, active learning environment (Phipps et al., 2008). Student learning is now a seen as a source of enrichment for the student through a multitude of activities both inside and outside of the traditional classroom (Phipps et al., 2008). Students now find themselves engaged in courses to increase variability in content delivery can enhance student cognitive engagement (Rosenshine & Furst, 1971). This trend has only strengthened in the wake of COVID-19.

Ag in the Classroom began in Georgia during the 1983-1984 school year as a cooperative effort between the State Farm Bureau and the State Department of Education (Herren & Oakley, 1995). Forty-seven other states had also developed materials for use in programs similar to Ag in the Classroom (Herren & Oakley, 1995). The overall goal of the program was to teach children where food and fiber comes from and the importance of agriculture to the economy (Herren & Oakley, 1995). As specific objectives were written, units of instruction for each unit were developed for the objectives (Herren & Oakley, 1995). Curriculum for kindergarten through grade four was the framework used to integrate agricultural concepts into the regular curriculum (Herren & Oakley, 1995). The concept was that, as the basic skills are taught, agricultural examples could be used as illustrations (Herren & Oakley, 1995). Representatives of education and agriculture developed and then pilot tested the curriculum materials (Herren & Oakley, 1995). Prior to the implementation, teachers received in service training on how to use the curriculum materials (Herren & Oakley, 1995). The recommended time for teaching the curriculum was six weeks and it continues to be implemented today (Herren & Oakley, 1995).

Since the curriculum was first introduced in 1987, only one study was found that attempted to evaluate "Ag in the Classroom." Herren and Oakley published their findings of the program's impact in Georgia in1995. The research found that "Ag in the Classroom" as effective in teaching the agricultural concepts for both urban and rural students (Herren & Oakley, 1995). The program was effective whether students were randomly assigned to classes or according to ability (Herren & Oakley, 1995).

Curriculum Review

Agricultural educators today work to balance the needs of students from many backgrounds, many of whom will not pursue production agriculture full-time (Croom et al., 2014). A standardized curriculum has left teachers to navigate Stimson's model, and the modified interpretation of it, to ensure that each student can learn those skills from project-based learning that are directly related to their specific chosen careers (Smith & Rayfield, 2016). It has also been advocated that the curriculum be flexible and dynamic enough to provide a supportive environment for learners to develop their self-worth and respond to their various needs in a constantly changing environment (Bellah & Dyer, 2009; Smith & Rayfield, 2016). Authentic pedagogy was found to make connections to the world beyond the classroom (Wehlage et al., 1996). Using this form of pedagogy resulted in an increase of academic performance for students within all levels of education and equitably among all social backgrounds in both mathematics and social studies (Wehlage et al., 1996).

These findings about blended learning and linking of curriculum have continually been supported by the research. Lynch (1999) said "it is imperative that children be taught an integrated curriculum in their early years because what is learned, how it is learned, and adapting in early years is the greatest predictor for subsequent success in education and in workplaces" (p.

14). It had been found that strong connections between a multitude of subjects from home, community, and school, during the earliest years of education develop a critical foundation upon which all education and lifelong patterns for learning build due to connections created within the brain (Knobloch & Martin, 2002). It seems that the most prominent of these connections are developed in times at age between two and eleven (Knobloch & Martin, 2002). Therefore, age-appropriate career information must be taught to children in order to begin building connections between real world applications and their formal education (Knobloch & Martin, 2002). Kaufman et al. (2000) found that students who perceived their academic and vocational teachers were working together had greater achievement in math, reading, and writing skills. There were also some indications that students doing joint projects with both a vocational and academic teacher improved a school's academic achievement.

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 continues to have substantial growth potential (Chapman, 2017). 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 et al., 2003). Elementary agriculture programs have the potential to spark an interest and understanding of the many facets of the agriculture industry.

Agricultural educators have learned that teachers and students vary in their perceptions of agriculture (Trexler et al., 2000). Trexler et al. (2000) found that elementary and middle school teachers suggested that direct instruction about agricultural, food, fiber, and natural resources

systems begin in the early elementary curriculum and that a thematically based, integrated curriculum would be an effective way to increase agriculture awareness in schools. Malaguzzi (1998) suggests that the goal of teaching should be to provide learning through proper conditions.

Best practices for educators deem that the teacher should follow the children not the plans or lessons, but they offer multiple options, suggestive ideas, and sources of support, questions, clues and paths to follow (DeVries et al., 2002). Activities and experiences are selected because they have substance, depth, and significance (DeVries et al., 2002). The activities and materials selected are appropriate to a wide range of developmental levels, concrete rather than abstract, and are analyzed in terms of regularities and relationships children can construct (DeVries et al., 2002). The best activities and experiences build on existing knowledge and allow children to apply the knowledge in their life. Children will put forth more effort, continue in the face of difficulties, and are persistent when there is a conscious aim (Vartuli & Rohs, 2008).

Theoretical Framework

Public school curricula often center around student development of conceptual understanding across a variety of disciplines. This steers the student's learning to occurs when the schema is transformed and therefore, educators need to know what commonly held perceptions learners have prior to teaching (Hess & Trexler, 2011). Much of science education research is built upon the work of cognitive psychologists Piaget and Ausubel who theorized that learning is the integration of new perceptions and ideas into existing conceptual frameworks (Hess & Trexler, 2011).

Theory formed from previous research is used as a framework in both quantitative and qualitative study designs in an effort to understand, explain, or even predict (Knobloch et al.,

2007). The primary goal of a theory is to make sense of reality and guide the gathering and assessment of data (Baker & King, 2016). The theoretical framework of this study was based on teachers' expectancy-value, motivation, including self-efficacy, outcome expectancy, and task-value motivation. Winther et al. (2002) suggests:

> Teachers are more likely to integrate agriculture into education if they believe: (a) they have the abilities and knowledge to teach agricultural content, (b) integration will help them achieve learning goals, and (c) the benefits outweigh the costs of integrating agricultural topics into existing content, and how much time will be spent on the content. (p. 30).

Furthermore, the beliefs and experiences influence what teachers are most knowledgeable about and how they will teach that knowledge to their students (Borko & Putnam, 1996). Teachers are motivated if they believe they can perform the desired tasks and influence the teaching-learning process with positive outcomes (Bandura, 1997). Calderhead (1996) suggests that experiences can shape one's way of knowing and schema about the content. Therefore, the agricultural content that teachers choose to teach and how those topics relate to their content areas expectancy-value beliefs, ways of knowing, and schemas about agriculture (Bandura, 1997; Borko & Putnam, 1996; Calderhead, 1996; Knobloch et al., 2007).

Chapter Summary

The purpose of Chapter 2 was to present and provide a detailed description of the previous research literature along with theoretical and conceptual frameworks that serve as a foundation and guide for this study. With a comprehensive review of the literature, a relevant evaluation was possible and contributed to the overall design of this study. The literature detailed in this chapter was primarily focused on the history of agricultural education, philosophies that

shaped agriculture education, history of elementary agriculture education, agricultural literacy, agriculture in the classroom, and curriculum review. Little literature exists in the field of elementary agricultural education as it is a brand new field being piloted for the first time in a century in Georgia.

Chapter 3

Methods

Introduction

The purpose of this study was to describe the grade level curriculum standards for the Georgia Elementary Agriculture Pilot Program (GEAPP) and the factors contributing to the program such as collaboration with community stakeholders and other existing Agriculture entities such as Middle School Agriculture Programs, High School Agriculture Programs, County Farm Bureaus, and Extension/ 4-H. Seven research objectives were used to guide the study:

1. Describe the grade levels being taught in the pilot program schools.
2. Describe the perceived importance of the current approved Georgia Department of Education Elementary Agriculture Pilot Program (GEAPP) curriculum standards.
3. Describe the educator's level of certification, as it pertains, to the endorsement created by the Georgia Professional Standards Commission and their desire to earn the Elementary Agriculture endorsement/certification.
4. Describe the educator's pathway to becoming an Elementary Agriculture Teacher.
5. Describe the pilot programs involvement with existing school-based agriculture education programs offered in the school system.
6. Describe the educators use of current available elementary agriculture resources.
7. Describe stakeholder collaboration within the community of the pilot program.

A quantitative and descriptive research design was used for this study. Quantitative research is defined as inquiry employing operational definitions to generate numeric data to answer predetermined questions (Ary et al., 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 (Holton & Burnett, 1997). 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 questionnaire that was broken down into sections based on what grade level they were responsible for educating with the GEAPP curriculum. After the introduction, the second part of the questionnaire was designed to collect data on teacher’s perceived level of importance of the universal GEAPP standards for all grade levels, kindergarten through fifth grade regarding employability skills. The third part of the questionnaire allowed for teachers to select the grade levels they teach using skip logic within Qualtrics. If a grade level was selected, the participants were then given questions concerning each standard and subsection of that grade level’s GEAPP curriculum. The study was designed to collect the data necessary to evaluate the current program educator demographics, teacher certification expectations, and stakeholder engagement.

Population and Sample

The researcher compiled a list of all Georgia Elementary Agriculture Pilot Program teachers (*N*= 30) and created a spreadsheet with teacher name and email address. Teacher and school information was collected via the Georgia Agricultural Education website. Teachers were contacted via the Qualtrics platform. Teachers received an email with information regarding the justification of the study (Appendix I). The email included a link to the study information letter (Appendix II). Follow-up emails were generated through the Qualtrics platform until it was determined that no further samples were being collected. The emails only went to those individuals who had not started or completed the questionnaire. Follow-up emails were discontinued and the active link was deactivated when it was determined responses should end (*N*= 18).

Instrumentation & Data Collection

A questionnaire designed in Qualtrics was used in this study to collect data (Appendix III). This method allowed teachers to provide the information necessary to address the research questions. The data collection process spanned approximately four weeks (February-March 2021). 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 et al., 2010; Ravid, 2011).

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 multi 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) using Likert-type scales. The needs assessment model served as the guide for the development of the questionnaire so that teacher perception and discrepancy data could be collected.

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 and percentages. Objective two was analyzed and reported using means and standard deviations. Objective three was analyzed and reported using frequencies, percentages, and a Chi-square analysis. Objective four was analyzed and reported using frequencies and percentages. Objective five was analyzed and reported using frequencies and percentages. Objective six was analyzed and reported using frequencies, percentages, and a Chi-square analysis. Objective seven was analyzed and reported using frequencies and percentages. The results were all displayed in a variety of tables appropriate to the objective and the information being reported.

Measure of Validity

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 GEAPP standards 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).

Chapter Summary

Chapter three identified the methods used in the study. The chapter included a detailed description of the research design, population and sample, instrumentation and data collection, data analysis, and measure of validity. 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 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 current GEAPP standards, as well as, to report information relevant to the GEAPP.

Teachers completed a three-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, and Chi-square analysis. Appropriate steps were taken to ensure validity of collected data. The following chapter provides a description of the findings of the study.

CHAPTER 4

Data Analysis and 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 grade levels being taught in the pilot program schools.
2. Describe the perceived importance of the current approved Georgia Department of Education Elementary Agriculture Pilot Program (GEAPP) curriculum standards.
3. Describe the educator's level of certification, as it pertains, to the endorsement created by the Georgia Professional Standards Commission and their desire to earn the Elementary Agriculture endorsement/certification.
4. Describe the educator's pathway to becoming an Elementary Agriculture Teacher.
5. Describe the pilot programs involvement with existing school-based agriculture education programs offered in the school system.
6. Describe the educators use of current available elementary agriculture resources.
7. Describe stakeholder collaboration within the community of the pilot program.

Objective 1: Describe the grade levels being taught in the pilot program schools.

Information from this study is presented in Table 1. Overall, there were 18 GEAPP teachers that responded to the questionnaire. Of the 18 teachers that responded to the questionnaire, 10 teachers stated that they teach Kindergarten students (*f*= 10, %= 55.6), 11 teachers stated that they taught first grade (*f*= 11, %= 61.1), 12 teachers stated they teach second grade (*f*= 12, %= 66.7), 14 teachers stated they teach third grade (*f*= 14, %= 77.8), 14 teachers stated they teach fourth grade (*f*= 14, %= 77.8), and 13 teachers stated that they teach fifth grade (*f*= 13, %= 72.2).

Table 1

Grade levels taught by Georgia Elementary Agriculture Pilot Program Teachers

Grade Level Taught	F	%
Kindergarten	10	55.6
First Grade	11	61.1
Second Grade	12	66.7
Third Grade	14	77.8
Fourth Grade	14	77.8
Fifth Grade	13	77.2

Objective 2: Describe the perceived importance of the current approved Georgia Department of Education Elementary Agriculture Pilot Program curriculum standards.

All teachers were asked to rate the universal standards for all grade levels which are labelled, Employability Skills, using Likert-type scales based on Borich's Needs Assessment Model. The scale was as follows: 1= Strongly agree, 2= Somewhat agree, 3= Neither agree nor disagree, 4= Somewhat disagree, and 5= Strongly disagree. As reported in Table 2 of this study, the respondents indicated "Communicate effectively through writing, speaking, listening, reading, and interpersonal abilities" (*M*= 1.22, *SD*= .94), "Demonstrate career awareness through the appropriate use of various technologies" (*M*= 1.67, *SD*= .97), "Model work readiness traits required for success in the workplace" (*M*= 1.44, *SD*= .86), and "Apply the appropriate skill sets to be productive in the workplace, work independently and apply teamwork skills" (*M*= 1.33, *SD*= .77). No significance was found based upon the data analysis. The educators all agree that the curriculum standards for employability skills were all relevant.

Table 2

Universal Standards for all grade levels: Employability Skills

Grade Level	*Curriculum Standard*	*M*	*SD*
K-5	Employability Skills: Communicate effectively through writing, speaking, listening, reading, and interpersonal abilities	1.22	.94
K-5	Employability Skills: Demonstrate career awareness through the appropriate use of various technologies	1.67	.97
K-5	Employability Skills: Model work readiness traits required for success in the workplace	1.44	.86
K-5	Employability Skills: Apply the appropriate skill sets to be productive in the workplace, work independently and apply teamwork skills	1.33	.77

Note. The scale used was 1= Strongly agree, 2= Somewhat agree, 3= Neither agree nor disagree, 4= Somewhat disagree, and 5= Strongly disagree.

Teachers were asked to select the grade level they taught. Using skip logic, teachers would only answer questions to rate the standards for the grade levels they taught. All grade levels standards are divided into 4 categories: Agricultural Systems, Foundations of Agriculture, Leadership and Career Readiness, and Natural Resource Systems. All teachers were asked to rate the grade level standards using Likert-type scales based on Borich's Needs Assessment Model. The scale was as follows: 1= Strongly agree, 2= Somewhat agree, 3= Neither agree nor disagree, 4= Somewhat disagree, and 5= Strongly disagree.

In Kindergarten, ten teachers indicated that they taught kindergarten (*f*= 10, %= 55.6). The Agricultural Systems standard focuses on: Investigate and develop an understanding of agricultural systems such as Agricultural Mechanics; Plant Systems; Animal Systems; and/or Food Systems. It is further broken down into 4 areas of concentration. Table 3 indicates the kindergarten teacher responses for the Agricultural Systems curriculum standards. The following subsections are listed under this standard: "KAS1: Connect and categorize the products: such as milk, eggs, bread, and blue jeans, used daily from agriculture" (*M*=1.10, *SD*=.32), "KAS2: Investigate agricultural safety. For example, companion and farm animal safety, electrical safety, equipment safety, such as hand tools, farm tools, lawnmowers, tractors, chain saws, etc." (*M*=1.60, *SD*=1.08), "KAS3: Distinguish between edible and non-edible plants that are produced in agriculture" (*M*=1.40, *SD*= .97), and "KAS4: Discuss the basic needs of plants" (*M*=1.00, *SD*=.00). No significance was found based upon the data analysis. While the educators all agree that the curriculum standards were relevant, it should be noted that standard KAS4 was selected as the only standard in this area where all respondents strongly agreed.

Table 3

Kindergarten standards for Agricultural Systems

Grade Level	*Curriculum Standard*	*M*	*SD*
K	KAS1: Connect and categorize the products: such as milk, eggs, bread, and blue jeans, used daily from agriculture	1.10	.32
K	KAS2: Investigate agricultural safety. For example, companion and farm animal safety, electrical safety, equipment safety, such as hand tools, farm tools, lawnmowers, tractors, chain saws, etc.	1.60	1.08
K	KAS3: Distinguish between edible and non-edible plants that are produced in agriculture	1.40	.97
K	KAS4: Discuss the basic needs of plants	1.00	.00

Note. The scale used was 1= Strongly agree, 2= Somewhat agree, 3= Neither agree nor disagree, 4= Somewhat disagree, and 5= Strongly disagree.

Table 4 represents the kindergarten teacher responses for Foundations of Agriculture: Explore and communicate the importance of agriculture and its impact on daily life. The following subsections are listed under this standard: “KFA1: Discuss examples of agricultural products and how they are used, food crops, plant and animal, timber for building, landscapes, etc.” (*M*=1.00, *SD*=.00), “KFA2a: Define the characteristics of a farm: differentiate between living and non-living aspects of a farm” (*M*=1.00, *SD*=.00), and “KFA2b: Define the characteristics of a farm: investigate the role of different types of farmers” (*M*=1.40, *SD*=.84). No significance was found based upon the data analysis. The educators all agree that the curriculum standards were relevant. Standards KFA1 and KFA2 were both selected as standards in this area that all respondents strongly agreed.

Table 4

Kindergarten standards for Foundations of Agriculture

Grade Level	*Curriculum Standard*	*M*	*SD*
K	KFA1: Discuss examples of agricultural products and how they are used, food crops, plant and animal, timber for building, landscapes, etc.	1.00	.00
K	KFA2: Define the characteristics of a farm: differentiate between living and non-living aspects of a farm	1.00	.00
K	KFA3: Define the characteristics of a farm: investigate the role of different types of farmers	1.40	.84

Note. The scale used was 1= Strongly agree, 2= Somewhat agree, 3= Neither agree nor disagree, 4= Somewhat disagree, and 5= Strongly disagree.

Table 5 represents the kindergarten teacher responses for Leadership and Career Readiness: Develop an understanding of career readiness while exploring youth leadership opportunities and careers in agriculture as indicated by the National FFA Organization. The following subsections are listed under this standard: "KLCR1: Describe characteristics of agricultural jobs" (*M*=1.40, *SD*= .70) and "KLCR2: Begin to recognize and demonstrate the use of interpersonal qualities, also known as people skills" (*M*=1.40, *SD*=.97). No significance was found based upon the data analysis. The educators all agree that the curriculum standards were relevant and to the same degree.

Table 5

Kindergarten standards for Leadership and Career Readiness

Grade Level	*Curriculum Standard*	*M*	*SD*
K	KLCR1: Describe characteristics of agricultural jobs	1.40	.70
K	KLCR2: Begin to recognize and demonstrate the use of interpersonal qualities, also known as people skills	1.40	.97

Note. The scale used was 1= Strongly agree, 2= Somewhat agree, 3= Neither agree nor disagree, 4= Somewhat disagree, and 5= Strongly disagree.

Table 6 represents the kindergarten teacher responses for Natural Resource Systems: Develop and build an understanding of the area of forestry, environmental and natural resource systems. The following subsections are listed under this standard: "KNRS1: Investigate the components of a forest and your environment" (*M*=1.20, *SD*=.42), "KNRS2: Differentiate among the different uses of land- crop production, pasture, forestry, etc." (*M*=1.50, *SD*=.85), "KNRS3: Differentiate among the different uses of livestock, companion animals, and wildlife" (*M*=1.30, *SD*=.48), "KNRS4: Investigate the need to reduce, reuse, and recycle" (*M*=1.20, *SD*=.63). No significance was found based upon the data analysis. The educators all agree that the curriculum standards were relevant.

Table 6

Kindergarten standards for Natural Resource Systems

Grade Level	*Curriculum Standard*	*M*	*SD*
K	KNRS1: Investigate the components of a forest and your environment	1.20	.42
K	KNRS2: Differentiate among the different uses of land- crop production, pasture, forestry, etc.	1.50	.85
K	KNRS3: Differentiate among the different uses of livestock, companion animals, and wildlife	1.30	.48
K	KNRS4: Investigate the need to reduce, reuse, and recycle	1.20	.63

Note. The scale used was 1= Strongly agree, 2= Somewhat agree, 3= Neither agree nor disagree, 4= Somewhat disagree, and 5= Strongly disagree.

Teachers were asked to select the grade level they taught. Using skip logic, teachers would only answer questions to rate the standards for the grade levels they taught. All grade levels standards are divided into 4 categories: Agricultural Systems, Foundations of Agriculture, Leadership and Career Readiness, and Natural Resource Systems. In first grade, 11 teachers stated that they taught first grade (*f*= 11, %= 61.1). The Agricultural Systems standard focuses on: Investigate and develop an understanding of agricultural systems such as Agricultural Mechanics; Plant Systems; Animal Systems; and/or Food Systems. It is further broken down into 4 areas of concentration. Table 7 indicates the first-grade teacher responses for the Agricultural Systems curriculum standards. The following subsections are listed under this standard: "1AS1: Diagram and compare the structures of plants" (*M*=1.10, *SD*=.32), "1AS2: Produce a plant from a seed and/or a cutting" (*M*=1.10, *SD*=.32), "1AS3: Discuss parts of a plant- roots, leaf, stem, and flower" (*M*=1.00, *SD*=.00), and "1AS4: Measure using various tools- rulers, yardsticks, measuring tapes, measuring cups and spoons, etc." (*M*=1.00, *SD*=.00). No significance was found based upon the data analysis. The educators all agree that the curriculum standards were relevant. All educators that responded strongly agreed that 1AS3 and 1AS4 were the most important standards of this section.

Table 7

First grade standards for Agricultural Systems

Grade Level	*Curriculum Standard*	*M*	*SD*
1	1AS1: Diagram and compare the structures of plants	1.10	.32
1	1AS2: Produce a plant from a seed and/or a cutting	1.10	.32
1	1AS3: Discuss parts of a plant- roots, leaf, stem, and flower	1.00	.00
1	1AS4: Measure using various tools- rulers, yardsticks, measuring tapes, measuring cups and spoons, etc.	1.00	.00

Note. The scale used was 1= Strongly agree, 2= Somewhat agree, 3= Neither agree nor disagree, 4= Somewhat disagree, and 5= Strongly disagree.

Table 8 represents the first-grade teacher responses for Foundations of Agriculture: Explore and communicate the importance of agriculture and its impact on daily life. The following subsections are listed under this standard: "1FA1: Discuss and cite examples of the way agricultural products address human needs for food, clothing/fiber, and shelter" (*M*=1.00, *SD*=.00), "1FA2: Identify agriculture commodities, business, and industries in your area" (*M*=1.20, *SD*=.42), "1FA3: Explore food preparation and preservation techniques" (*M*=1.30, *SD*=.48). No significance was found based upon the data analysis. The educators all agree that the curriculum standards were relevant. However, all educators that responded to this section of standards strongly agreed that 1FA1 was the most important standard to this section.

Table 8

First grade standards for Foundations of Agriculture

Grade Level	*Curriculum Standard*	*M*	*SD*
1	1FA1: Discuss and cite examples of the way agricultural products address human needs for food, clothing/fiber, and shelter	1.00	.00
1	1FA2: Identify agriculture commodities, business, and industries in your area	1.20	.42

Note. The scale used was 1= Strongly agree, 2= Somewhat agree, 3= Neither agree nor disagree, 4= Somewhat disagree, and 5= Strongly disagree.

Table 9 represents the first-grade teacher responses for Leadership and Career Readiness: Develop an understanding of career readiness while exploring youth leadership opportunities and careers in agriculture as indicated by the National FFA Organization. The following subsections are listed under this standard: “1LCR1a: Demonstrate and develop soft skills: Define and demonstrate a strong work ethic and positive attitude” (*M*=1.30, *SD*=.95), “1LCR1b: Demonstrate and develop soft skills: Define and demonstrate a spirit of community service and being respectful” (*M*=1.30, *SD*=.95), “1LCR2: Explore careers related to the plant industry such as a horticulturist, landscaper, greenhouse operator, florist, or plant breeder” (*M*=1.40, *SD*=.70), “1LCR3: Identify a local agricultural leader and describe their impact on your community” (*M*=1.30, *SD*=.43). No significance was found based upon the data analysis. The educators all agree that the curriculum standards were relevant and necessary to this section.

Table 9

First grade standards for Leadership and Career Readiness

Grade Level	*Curriculum Standard*	*M*	*SD*
1	1LCR1a: Demonstrate and develop soft skills: Define and demonstrate a strong work ethic and positive attitude	1.30	.95
1	1LCR1b: Demonstrate and develop soft skills: Define and demonstrate a spirit of community service and being respectful	1.30	.95
1	1LCR2: Explore careers related to the plant industry such as a horticulturist, landscaper, greenhouse operator, florist, or plant breeder	1.40	.70
1	1LCR3: Identify a local agricultural leader and describe their impact on your community	1.30	.43

Note. The scale used was 1= Strongly agree, 2= Somewhat agree, 3= Neither agree nor disagree, 4= Somewhat disagree, and 5= Strongly disagree.

Table 10 represents the first-grade teacher responses for Natural Resource Systems: Develop and build an understanding of the area of forestry, environmental and natural resource systems. The following subsections are listed under this standard: "1NRS1: Cite examples of products obtained from our forests and farms" (*M*=1.10, *SD*=.32), "1NRS2: Discuss & compare a variety of trees found in your area- identify, map and label deciduous and evergreen trees nearby" (*M*=1.30, *SD*=.68). "1NRS3: Investigate the features of soil- compare and contrast various soil samples found in your area" (*M*=1.40, *SD*=.52). No significance was found based upon the data analysis. The educators all agree that the curriculum standards were relevant to this area of the grade level standards.

Table 10

First grade standards for Natural Resource Systems

Grade Level	*Curriculum Standard*	*M*	*SD*
1	1NRS1: Cite examples of products obtained from our forests and farms	1.10	.32
1	1NRS2: Discuss & compare a variety of trees found in your area- identify, map and label deciduous and evergreen trees nearby	1.30	.68
1	1NRS3: Investigate the features of soil- compare and contrast various soil samples found in your area	1.40	.52

Note. The scale used was 1= Strongly agree, 2= Somewhat agree, 3= Neither agree nor disagree, 4= Somewhat disagree, and 5= Strongly disagree.

Teachers were asked to select the grade level they taught. Using skip logic, teachers would only answer questions to rate the standards for the grade levels they taught. All grade levels standards are divided into 4 categories: Agricultural Systems, Foundations of Agriculture, Leadership and Career Readiness, and Natural Resource Systems. In second grade, 12 teachers stated they teach second grade (*f*= 12, %= 66.7). The Agricultural Systems standard focuses on: Investigate and develop an understanding of agricultural systems such as Agricultural Mechanics; Plant Systems; Animal Systems; and/or Food Systems. It is further broken down into 4 areas of concentration. Table 11 indicates the second-grade teacher responses for the Agricultural Systems curriculum standards. The following subsections are listed under this standard: "2AS1: Analyze the importance of animals in agriculture and examine the role they play in the lives of consumers" (*M*=1.00, *SD*=.00), "2AS2: Investigate the life cycle of different animals" (*M*=1.08, *SD*=.29), "2AS3: Demonstrate an understanding of food safety when handling animal products or byproducts" (*M*=1.17, *SD*=.39), "2AS4: Collect, display and explain the parts of a production animal and the importance of each part" (*M*=1.58, *SD*=1.24), and "2AS5: Collect, display and explain the parts of a plant and the importance of each part-roots, leaf, stem, flower, seed, and fruit" (*M*=1.00, *SD*=.00). No significance was found based upon the data analysis. The educators all agree that the curriculum standards were relevant. The educators that responded in this section strongly agreed that standards 2AS1 and 2AS5 were the most important standards of this area.

Table 11

Second grade standards for Agricultural Systems

Grade Level	*Curriculum Standard*	*M*	*SD*
2	2AS1: Analyze the importance of animals in agriculture and examine the role they play in the lives of consumers	1.00	.00
2	2AS2: Investigate the life cycle of different animals	1.08	.29
2	2AS3: Demonstrate an understanding of food safety when handling animal products or byproducts	1.17	.39
2	2AS4: Collect, display and explain the parts of a production animal and the importance of each part	1.58	1.24
2	2AS5: Collect, display and explain the parts of a plant and the importance of each part- roots, leaf, stem, flower, seed, and fruit	1.00	.00

Note. The scale used was 1= Strongly agree, 2= Somewhat agree, 3= Neither agree nor disagree, 4= Somewhat disagree, and 5= Strongly disagree.

Table 12 represents the second-grade teacher responses for Foundations of Agriculture: Explore and communicate the importance of agriculture and its impact on daily life. The following subsections are listed under this standard: “2FA1: Analyze household and daily used items to determine how they were made, Georgia Commodities- investigate the origin of certain by-products” (*M*=1.17, *SD*=.39), “2FA2: Identify the nutritional value of agricultural products in a healthy diet” (*M*=1.17, *SD*=.39), “2FA3: Identify historical figures in agriculture history and describe their contributions such as George Washington Carver, Jimmy Carter, James E. Oglethorpe, Eli Whitney” (*M*=1.00, *SD*=.00), and “2FA4: Cite evidence that agricultural partnerships influence agriculture guidelines including conservation, food safety, and best practices” (*M*=1.42, *SD*=.52). No significance was found based upon the data analysis. The educators all agree that the curriculum standards were relevant; however, standard 2FA3 was determined to be the most relevant to the educators who responded in this section.

Table 12

Second grade standards for Foundations of Agriculture

Grade Level	*Curriculum Standard*	*M*	*SD*
2	2FA1: Analyze household and daily used items to determine how they were made, Georgia Commodities- investigate the origin of certain by-products	1.17	.39
2	2FA2: Identify the nutritional value of agricultural products in a healthy diet	1.17	.39
2	2FA3: Identify historical figures in agriculture history and describe their contributions such as George Washington Carver, Jimmy Carter, James E. Oglethorpe, Eli Whitney	1.00	.00
2	2FA4: Cite evidence that agricultural partnerships influence agriculture guidelines including conservation, food safety, and best practices	1.42	.52

Note. The scale used was 1= Strongly agree, 2= Somewhat agree, 3= Neither agree nor disagree, 4= Somewhat disagree, and 5= Strongly disagree.

Table 13 represents the second-grade teacher responses for Leadership and Career Readiness: Develop an understanding of career readiness while exploring youth leadership opportunities and careers in agriculture as indicated by the National FFA Organization. The following subsections are listed under this standard: “2LCR1: Identify and apply concepts related to leadership, personal, and career skill development” (*M*=1.33, *SD*= .78), “2LCR2: Memorize and recite the National FFA Motto: Learning to Do, Doing to Learn, Earning to Live, Living to Serve” (*M*=1.92, *SD*=1.38), and “2LCR3: Explore and investigate local / state agriculture careers and their impact on your community related to food and nutrition such as food safety specialists, extension agents, ag teachers, school nutritionists, meat inspectors, and agricultural researchers” (*M*=1.50, *SD*=1.00). No significance was found based upon the data analysis. The educators all agree that the curriculum standards were relevant.

Table 13

Second grade standards for Leadership and Career Readiness

Grade Level	*Curriculum Standard*	*M*	*SD*
2	2LCR1: Identify and apply concepts related to leadership, personal, and career skill development	1.33	.778
2	2LCR2: Memorize and recite the National FFA Motto: Learning to Do, Doing to Learn, Earning to Live, Living to Serve	1.92	1.379
2	2LCR3: Explore and investigate local / state agriculture careers and their impact on your community related to food and nutrition such as food safety specialists, extension agents, ag teachers, school nutritionists, meat inspectors, and agricultural researchers.	1.50	1.000

Note. The scale used was 1= Strongly agree, 2= Somewhat agree, 3= Neither agree nor disagree, 4= Somewhat disagree, and 5= Strongly disagree.

Table 14 represents the second-grade teacher responses for Natural Resource Systems: Develop and build an understanding of the area of forestry, environmental and natural resource systems. The following subsections are listed under this standard: "2NRS1: Identify and distinguish natural resources found within their region" (*M*=1.08, *SD*=.29), "2NRS2: Define and identify best practices in agriculture in the school's region" (*M*=1.42, *SD*=.67), "2NRS3: Assess the components of various habitats found within their region" (*M*=1.08, *SD*=.29). No significance was found based upon the data analysis. The educators all agree that the curriculum standards were relevant.

Table 14

Second grade standards for Natural Resource Systems

Grade Level	*Curriculum Standard*	*M*	*SD*
2	2NRS1: Identify and distinguish natural resources found within their region	1.08	.29
2	2NRS2: Define and identify best practices in agriculture in the school's region	1.42	.67
2	2NRS3: Assess the components of various habitats found within their region	1.08	.29

Note. The scale used was 1= Strongly agree, 2= Somewhat agree, 3= Neither agree nor disagree, 4= Somewhat disagree, and 5= Strongly disagree.

Teachers were asked to select the grade level they taught. Using skip logic, teachers would only answer questions to rate the standards for the grade levels they taught. All grade levels standards are divided into 4 categories: Agricultural Systems, Foundations of Agriculture, Leadership and Career Readiness, and Natural Resource Systems. In third grade, 14 teachers stated they teach third grade (*f*= 14, %= 77.8). The Agricultural Systems standard focuses on: Investigate and develop an understanding of agricultural systems such as Agricultural Mechanics; Plant Systems; Animal Systems; and/or Food Systems. It is further broken down into 4 areas of concentration. Table 15 indicates the third-grade teacher responses for the Agricultural Systems curriculum standards. The following subsections are listed under this standard: "3AS1: Relate the importance of how food is produced, handled, prepared and stored in order to protect the safety and nutritional value of the food" (*M*=1.00, *SD*=.00), "3AS2: Define, investigate and compare common food product labels such as: organic, GMOs, etc." (*M*=1.29, *SD*=.83), "3AS3: Research the role of pollinators- bees, birds, butterflies, etc." (*M*=1.07, *SD*=.27), "3AS4: Describe the role of government and industry research in ensuring a safe and wholesome food supply and environmental stewardship such as USDA, GA Department of Agriculture, CDC, UGA Cooperative Extension/Experiment Station" (*M*=1.50, *SD*=.86). No significance was found based upon the data analysis. The educators all agree that the curriculum standards were relevant. Standard 3AS1 was selected by the educators who responded in this section as the standard that was the most important.

Table 15

Third grade standards for Agricultural Systems

Grade Level	*Curriculum Standard*	*M*	*SD*
3	3AS1: Relate the importance of how food is produced, handled, prepared and stored in order to protect the safety and nutritional value of the food	1.00	.00
3	3AS2: Define, investigate and compare common food product labels such as: organic, GMOs, etc.	1.29	.83
3	3AS3: Research the role of pollinators- bees, birds, butterflies, etc.	1.07	.27
3	3AS4: Describe the role of government and industry research in ensuring a safe and wholesome food supply and environmental stewardship such as USDA, GA Department of Agriculture, CDC, UGA Cooperative Extension/Experiment Station	1.50	.86

Note. The scale used was 1= Strongly agree, 2= Somewhat agree, 3= Neither agree nor disagree, 4= Somewhat disagree, and 5= Strongly disagree.

Table 16 represents the third-grade teacher responses for Foundations of Agriculture: Explore and communicate the importance of agriculture and its impact on daily life. The following subsections are listed under this standard: “3FA1: Describe how agriculture impacts your daily life” (*M*=1.07, *SD*=.27), “3FA2: Use a map to locate the geographic regions of Georgia; locate and compare the geographic regions such as crops/fruit production, livestock/poultry, native trees and plants, wildlife, fall line, and forestry” (*M*=1.29, *SD*=.61), “3FA3: Identify commodities based on the different geographic regions of Georgia and determine how environmental factors affect agriculture production in each region” (*M*=1.21, *SD*=.43), “3FA4: Connect the need for Georgia grown commodities to be exported to other regions and the need for imports of products from other places- make a historical connection to explorers and how people have been trading commodities since the beginning of time” (*M*=1.14, *SD*=.36), and “3FA5: Categorize the entities that influence Georgia Agriculture- local, state, and national government entities as well as private citizens” (*M*=150, *SD*=.65). No significance was found based upon the data analysis. The educators all agree that the curriculum standards were relevant.

Table 16

Third grade standards for Foundations of Agriculture

Grade Level	*Curriculum Standard*	*M*	*SD*
3	3FA1: Describe how agriculture impacts your daily life	1.07	.267
3	3FA2: Use a map to locate the geographic regions of Georgia; locate and compare the geographic regions such as crops/fruit production, livestock/poultry, native trees and plants, wildlife, fall line, and forestry	1.29	.611
3	3FA3: Identify commodities based on the different geographic regions of Georgia and determine how environmental factors affect agriculture production in each region	1.21	.426
3	3FA4: Connect the need for Georgia grown commodities to be exported to other regions and the need for imports of products from other places- make a historical connection to explorers and how people have been trading commodities since the beginning of time	1.14	.363
3	3FA5: Categorize the entities that influence Georgia Agriculture- local, state, and national government entities as well as private citizens	1.50	.650

Note. The scale used was 1= Strongly agree, 2= Somewhat agree, 3= Neither agree nor disagree, 4= Somewhat disagree, and 5= Strongly disagree.

Table 17 represents the third-grade teacher responses for Leadership and Career Readiness: Develop an understanding of career readiness while exploring youth leadership opportunities and careers in agriculture as indicated by the National FFA Organization. The following subsections are listed under this standard: “3LCR1: Develop and practice soft skills such as public speaking, eye contact, and good citizenship” (*M*=1.21, *SD*=.80), “3LCR2: Investigate Government and Agricultural Industry Leaders” (*M*=1.79, *SD*=.89), “3LCR3: Explore careers related to the Forestry & Natural Resources industry such as conservationist, environmentalist, game warden, wildlife management, hunting/fishing guides, forestry/natural resource professors, forestry/natural resources researchers, arborists” (*M*=1.57, *SD*=.94), and “3LCR4: Evaluate and provide rationale for an opinion writing on an agricultural related topic” (*M*=1.71, *SD*=.99). No significance was found based upon the data analysis. The educators all agree that the curriculum standards were relevant.

Table 17

Third grade standards for Leadership and Career Readiness

Grade Level	*Curriculum Standard*	*M*	*SD*
3	3LCR1: Develop and practice soft skills such as public speaking, eye contact, and good citizenship	1.21	.80
3	3LCR2: Investigate Government and Agricultural Industry Leaders	1.79	.89
3	3LCR3: Explore careers related to the Forestry & Natural Resources industry such as conservationist, environmentalist, game warden, wildlife management, hunting/fishing guides, forestry/natural resource professors, forestry/natural resources researchers, arborists	1.57	.94
3	3LCR4: Evaluate and provide rationale for an opinion writing on an agricultural related topic	1.71	.99

Note. The scale used was 1= Strongly agree, 2= Somewhat agree, 3= Neither agree nor disagree, 4= Somewhat disagree, and 5= Strongly disagree.

Table 18 represents the third-grade teacher responses for Natural Resource Systems: Develop and build an understanding of the area of forestry, environmental and natural resource systems. The following subsections are listed under this standard: "3NRS1: Examine positive and negative impact of agriculture production on the environment in your region- water, air, soil, plants, insects" (*M*=1.29, *SD*= .83), "3NRS2: Compare the different types of soil found in Georgia" (*M*=1.14, *SD*= .36), "3NRS3: Analyze Georgia's renewable and nonrenewable natural resources" (*M*=1.14, *SD*= .54), and "3NRS4: Identify and categorize wildlife found in Georgia" (*M*=1.14, *SD*= .36). No significance was found based upon the data analysis. The educators all agree that the curriculum standards were relevant.

Table 18

Third grade standards for Natural Resource Systems

Grade Level	*Curriculum Standard*	*M*	*SD*
3	3NRS1: Examine positive and negative impact of agriculture production on the environment in your region- water, air, soil, plants, insects	1.29	.83
3	3NRS2: Compare the different types of soil found in Georgia	1.14	.36
3	3NRS3: Analyze Georgia's renewable and nonrenewable natural resources	1.14	.54
3	3NRS4: : Identify and categorize wildlife found in Georgia	1.14	.36

Note. The scale used was 1= Strongly agree, 2= Somewhat agree, 3= Neither agree nor disagree, 4= Somewhat disagree, and 5= Strongly disagree.

Teachers were asked to select the grade level they taught. Using skip logic, teachers would only answer questions to rate the standards for the grade levels they taught. All grade levels standards are divided into 4 categories: Agricultural Systems, Foundations of Agriculture, Leadership and Career Readiness, and Natural Resource Systems. In fourth grade, 14 teachers stated they teach fourth grade (*f*= 14, %= 77.8). The Agricultural Systems standard focuses on: Investigate and develop an understanding of agricultural systems such as Agricultural Mechanics; Plant Systems; Animal Systems; and/or Food Systems. It is further broken down into 4 areas of concentration. Table 19 indicates the fourth-grade teacher responses for the Agricultural Systems curriculum standards. The following subsections are listed under this standard: "4AS1: Identify basic building tools, e.g., hammer, screwdriver, nail, screw, etc., and determine proper uses, including safety procedures" (*M*=1.14, *SD*= .36), "4AS2: Identify and assess which simple machine will complete a task, i.e., lever, pulley, wedge, inclined plane, wheel and axle, and screw" (*M*=1.07, *SD*=.27), and "4AS3: Design and create an example of a simple machine that can be used to complete an agricultural task" (*M*=1.71, *SD*= 1.20). No significance was found based upon the data analysis. The educators all agree that the curriculum standards were relevant.

Table 19

Fourth grade standards for Agricultural Systems

Grade Level	*Curriculum Standard*	*M*	*SD*
4	4AS1: Identify basic building tools, e.g., hammer, screwdriver, nail, screw, etc., and determine proper uses, including safety procedures	1.14	.36
4	4AS2: Identify and assess which simple machine will complete a task, i.e., lever, pulley, wedge, inclined plane, wheel and axle, and screw	1.07	.27
4	4AS3: Design and create an example of a simple machine that can be used to complete an agricultural task	1.71	1.20

Note. The scale used was 1= Strongly agree, 2= Somewhat agree, 3= Neither agree nor disagree, 4= Somewhat disagree, and 5= Strongly disagree.

Table 20 represents the fourth-grade teacher responses for Foundations of Agriculture: Explore and communicate the importance of agriculture and its impact on daily life. The following subsections are listed under this standard: “4FA1: Compare and contrast the past and present importance of agriculture products and by-products in your community and around the world” (*M*=1.14, *SD*=.36), “4FA2: Connect the relationship between weather, the environment, and agriculture- identify the impact weather has on agriculture and how it affects the quality of a crop” (*M*=1.14, *SD*=.57), and “4FA3: Infer/Interpret the impact of laws, guidelines, and regulations provided by the government and community partnerships on the agriculture industry” (*M*=1.29, *SD*=.61). No significance was found based upon the data analysis. The educators all agree that the curriculum standards were relevant.

Table 20

Fourth grade standards for Foundations of Agriculture

Grade Level	***Curriculum Standard***	**M**	**SD**
4	4FA1: Compare and contrast the past and present importance of agriculture products and by-products in your community and around the world	1.14	.36
4	4FA2: Connect the relationship between weather, the environment, and agriculture- identify the impact weather has on agriculture and how it affects the quality of a crop	1.14	.57
4	4FA3: Infer/Interpret the impact of laws, guidelines, and regulations provided by the government and community partnerships on the agriculture industry	1.29	.61

Note. The scale used was 1= Strongly agree, 2= Somewhat agree, 3= Neither agree nor disagree, 4= Somewhat disagree, and 5= Strongly disagree.

Table 21 represents the fourth-grade teacher responses for Leadership and Career Readiness: Develop an understanding of career readiness while exploring youth leadership opportunities and careers in agriculture as indicated by the National FFA Organization. The following subsections are listed under this standard: “4LCR1: Develop and apply verbal and nonverbal communication skills such as public speaking/ presentations” (*M*=1.21, *SD*=.80), “4LCR2: Develop an organized argument based on evidence supporting or opposing an agricultural issue” (*M*=1.57, *SD*=.85), “4LCR3: Explore various school and community organizations available for 4th graders to join in local area to develop leadership skills” (*M*=1.36, *SD*=.84), and “4LCR4: Explore careers related to the Agriculture Mechanics and Technology industry, such as equipment operators, welders, computer/website programmers, meat processing employees who work on equipment to process animals, tractor service techs, fence builders, ag engineers or ag mechanics teachers” (*M*=1.43, *SD*=.65). No significance was found based upon the data analysis. The educators all agree that the curriculum standards were relevant.

Table 21

Fourth grade standards for Leadership and Career Readiness

Grade Level	*Curriculum Standard*	*M*	*SD*
4	4LCR1: Develop and apply verbal and nonverbal communication skills such as public speaking/ presentations	1.21	.80
4	4LCR2: Develop an organized argument based on evidence supporting or opposing an agricultural issue	1.57	.85
4	4LCR3: Explore various school and community organizations available for 4th graders to join in local area to develop leadership skills	1.36	.84
4	4LCR4: Explore careers related to the Agriculture Mechanics and Technology industry, such as equipment operators, welders, computer/website programmers, meat processing employees who work on equipment to process animals, tractor service techs, fence builders, ag engineers or ag mechanics teachers	1.43	.65

Note. The scale used was 1= Strongly agree, 2= Somewhat agree, 3= Neither agree nor disagree, 4= Somewhat disagree, and 5= Strongly disagree.

Table 22 represents the fourth-grade teacher responses for Natural Resource Systems: Develop and build an understanding of the area of forestry, environmental and natural resource systems. The following subsections are listed under this standard: "4NRS1: Identify, investigate, and compare multiple native plant species in Georgia- categorize native vs. invasive plant species in Georgia" (M=1.14, SD=.363), "4NRS2: Identify, investigate, and compare multiple native animal species in Georgia as herbivore, carnivore, omnivore, and scavenger- categorize native vs. invasive animal species in Georgia" (M=1.07, SD=.267), and "4NRS3: Define a local watershed and how human actions impact water quality" (M=1.21, SD=.579). No significance was found based upon the data analysis. The educators all agree that the curriculum standards were relevant.

Table 22

Fourth grade standards for Natural Resource Systems

Grade Level	*Curriculum Standard*	*M*	*SD*
4	4NRS1: Identify, investigate, and compare multiple native plant species in Georgia- categorize native vs. invasive plant species in Georgia	1.14	.363
4	4NRS2: Identify, investigate, and compare multiple native animal species in Georgia as herbivore, carnivore, omnivore, and scavenger- categorize native vs. invasive animal species in Georgia	1.07	.267
4	4NRS3: Define a local watershed and how human actions impact water quality	1.21	.579

Note. The scale used was 1= Strongly agree, 2= Somewhat agree, 3= Neither agree nor disagree, 4= Somewhat disagree, and 5= Strongly disagree.

Teachers were asked to select the grade level they taught. Using skip logic, teachers would only answer questions to rate the standards for the grade levels they taught. All grade levels standards are divided into 4 categories: Agricultural Systems, Foundations of Agriculture, Leadership and Career Readiness, and Natural Resource Systems. In fifth grade, 13 teachers stated that they teach fifth grade (*f*= 13, %= 72.2). The Agricultural Systems standard focuses on: Investigate and develop an understanding of agricultural systems such as Agricultural Mechanics; Plant Systems; Animal Systems; and/or Food Systems. It is further broken down into 4 areas of concentration. Table 23 indicates the fifth-grade teacher responses for the Agricultural Systems curriculum standards. The following subsections are listed under this standard: "5AS1: Classify and differentiate between different breeds of livestock" (*M*=1.00, *SD*=.00), "5AS2: Compare and contrast instinct and learned animal behaviors" (*M*=1.23, *SD*=.60), "5AS3: Compare and contrast inherited and acquired physical traits in companion animals and livestock" (*M*=1.15, *SD*=.38), "5AS4: Examine the role of organisms in agriculture to soil and animals" (*M*=1.08, *SD*=.28), "5AS5: Connect the role of pollinators in agriculture" (*M*=1.15, *SD*=.38), "5AS6: Classify different types of trees in your area" (*M*=1.31, *SD*=.48), "5AS7: Differentiate and understand parts of plants and how they are utilized in agriculture" (*M*=1.00, *SD*=.00), and "5AS8: Investigate how agricultural biotechnology is used in Georgia agriculture" (*M*=1.46, *SD*=.78). No significance was found based upon the data analysis. The educators all agree that the curriculum standards were relevant. This area of standards had the most subsections of any set of standards across all grade levels. The educators who responded strongly agreed that standards 5AS1 and 5AS7 were the most important standards in this section.

Table 23

Fifth grade standards for Agricultural Systems

Grade Level	*Curriculum Standard*	*M*	*SD*
5	5AS1: Classify and differentiate between different breeds of livestock	1.00	.00
5	5AS2: Compare and contrast instinct and learned animal behaviors	1.23	.60
5	5AS3: Compare and contrast inherited and acquired physical traits in companion animals and livestock	1.15	.38
5	5AS4: Examine the role of organisms in agriculture to soil and animals	1.08	.28
5	5AS5: Connect the role of pollinators in agriculture	1.15	.38
5	5AS6: Classify different types of trees in your area	1.31	.48
5	5AS7: Differentiate and understand parts of plants and how they are utilized in agriculture	1.00	.00
5	5AS8: Investigate how agricultural biotechnology is used in Georgia agriculture	1.46	.78

Note. The scale used was 1= Strongly agree, 2= Somewhat agree, 3= Neither agree nor disagree, 4= Somewhat disagree, and 5= Strongly disagree.

Table 24 represents the fifth-grade teacher responses for Foundations of Agriculture: Explore and communicate the importance of agriculture and its impact on daily life. The following subsections are listed under this standard: "5FA1: Construct a model of the supply chain from origination to end product of commodities/ fiber/ natural resources" (*M*=1.31, *SD*=.630), "5FA2: Explore and cite examples of agricultural history, economics, and inventions" (*M*=1.38, *SD*=.650), and "5FA3: Assess the role of research in the agriculture industry" (*M*=1.38, *SD*=.650). No significance was found based upon the data analysis. The educators all agree that the curriculum standards were relevant.

Table 24

Fifth grade standards for Foundations of Agriculture

Grade Level	*Curriculum Standard*	*M*	*SD*
5	5FA1: Construct a model of the supply chain from origination to end product of commodities/ fiber/ natural resources	1.31	.630
5	5FA2: Explore and cite examples of agricultural history, economics, and inventions	1.38	.650
5	5FA3: Assess the role of research in the agriculture industry	1.38	.650

Note. The scale used was 1= Strongly agree, 2= Somewhat agree, 3= Neither agree nor disagree, 4= Somewhat disagree, and 5= Strongly disagree.

Table 25 represents the fifth-grade teacher responses for Leadership and Career Readiness: Develop an understanding of career readiness while exploring youth leadership opportunities and careers in agriculture as indicated by the National FFA Organization. The following subsections are listed under this standard: “5LCR1: Identify and apply concepts related to the National FFA mission- premier leadership, personal growth, and career success” (*M*=1.46, *SD*=1.20), “5LCR2: Explore careers related to the animal science industry such as livestock producers, veterinarians, small animal trainers, animal science researchers, meat inspectors, livestock buyers, livestock marketing, and animal pharmaceuticals representatives” (*M*=1.38, *SD*=.65), “5LCR3: Understand the leadership opportunities and officer roles in youth organizations at the local, area & state levels” (*M*=1.38, *SD*=.65), and “5LCR4: Compare the various school and community organizations that encourage leadership and personal growth” (*M*=1.38, *SD*=.65). No significance was found based upon the data analysis. The educators all agree that the curriculum standards were relevant.

Table 25

Fifth grade standards for Leadership and Career Readiness

Grade Level	*Curriculum Standard*	*M*	*SD*
5	5LCR1: Identify and apply concepts related to the National FFA mission- premier leadership, personal growth, and career success	1.46	1.198
5	5LCR2: Explore careers related to the animal science industry such as livestock producers, veterinarians, small animal trainers, animal science researchers, meat inspectors, livestock buyers, livestock marketing, and animal pharmaceuticals representatives	1.38	.650
5	5LCR3: Understand the leadership opportunities and officer roles in youth organizations at the local, area & state levels	1.38	.650
5	5LCR4: Compare the various school and community organizations that encourage leadership and personal growth	1.38	.650

Note. The scale used was 1= Strongly agree, 2= Somewhat agree, 3= Neither agree nor disagree, 4= Somewhat disagree, and 5= Strongly disagree.

Table 26 represents the fifth-grade teacher responses for Natural Resource Systems: Develop and build an understanding of the area of forestry, environmental and natural resource systems. The following subsections are listed under this standard: "5NRS1: Research the impact of agricultural practices on forests, soils and other natural resources" (*M*=1.31, *SD*=.86), and "5NRS2: Describe the benefits and the importance of conservation and recycling of natural resources" (*M*=1.23, *SD*=.83). No significance was found based upon the data analysis. The educators all agree that the curriculum standards were relevant.

Table 26

Fifth grade standards for Forestry and Natural Resources

Grade Level	*Curriculum Standard*	*M*	*SD*
5	5NRS1: Research the impact of agricultural practices on forests, soils and other natural resources	1.31	.86
5	5NRS2: Describe the benefits and the importance of conservation and recycling of natural resources	1.23	.83

Note. The scale used was 1= Strongly agree, 2= Somewhat agree, 3= Neither agree nor disagree, 4= Somewhat disagree, and 5= Strongly disagree.

All teachers were asked to rate the universal standards for all grade levels which are labelled, Employability Skills, using Likert-type scales based on Borich's Needs Assessment Model. The scale was as follows: 1= Strongly agree, 2= Somewhat agree, 3= Neither agree nor disagree, 4= Somewhat disagree, and 5= Strongly disagree. Further analysis was conducted as it related to the respondent's answers to the universal standards for all grades, Employability Skills (See Appendix D), compared to the responses selected for the curriculum standards for each grade level the respondent indicated that they taught. Table 27 represents the comparison results for subsection 1 of the Employability skills "Communicate effectively through writing, speaking, listening, reading, and interpersonal abilities". Respondents were randomly assigned a number in the table. As indicated, all respondents selected 1= Strongly Agree for this standard (N= 16) no matter which grades they taught and their variation in responses to other grade level curriculum standards.

Table 27

Comparison of universal standards sub section 1 to all other responses

Respondent	K-AS	K-FA	K-LCR	K-NRS	1-AS	1-FA	1-LCR	1-NRS	2-AS	2-FA	2-LCR	2-NRS	3-AS	3-FA	3-LCR	3-NRS	4-AS	4-FA	4-LCR	4-NRS	5-AS	5-FA	5-LCR	5-NRS
1	1.75	1.67	2.50	1.75																				
2	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.25	1.00	1.00	1.67	1.25	1.00	1.20	1.00	1.33	1.00	1.00	1.13	1.00	1.00	1.00
3					1.00	1.67	1.50	1.33	1.40	1.75	1.67	1.33	1.67	1.75	1.00	1.60	1.33	1.33	1.75	1.00	1.38	2.00	1.75	1.50
4													1.33	1.50	1.00	1.20	1.00	1.00	1.75	1.00	1.00	1.33	1.00	1.00
5									1.00	1.00	1.00	1.00	1.67	1.75	1.50	1.60	1.00	1.33	1.25	1.67	1.38	1.67	1.75	1.00
6	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.33	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
7													2.00	1.50	1.00	1.20								
8																	2.00	1.00	1.25	1.33	1.00	1.00	1.00	1.00
9													1.33	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
10	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.33	1.00	1.00	1.00	1.00	1.00	1.00	1.00				
11	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.33	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
12	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	1.00	1.33	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
13	1.00	1.00	1.00	1.00	1.25	1.00	1.00	2.00	1.00	1.00	2.33	1.00	1.33	1.00	1.25	1.20	2.33	1.00	1.50	1.00	1.13	1.67	2.50	1.00
14	2.25	1.67	1.50	1.75	1.00	1.00	1.00	1.33	1.20	1.25	1.33	1.33	1.33	1.75	1.00	1.00	1.67	1.00	1.25	1.00	1.00	1.00	1.00	1.00
15									1.80	1.00	2.67	1.00	1.33	2.50	1.00	1.00	1.67	1.00	1.50	1.00	1.25	1.00	1.50	1.00
16	1.00	1.00	1.50	1.00	1.25	1.67	1.50	1.00	1.40	1.75	1.00	1.67												
Total N	9	9	9	9	9	9	9	9	11	11	11	11	13	13	13	13	13	13	13	13	12	12	12	12
Mean	1.75	1.00	2.50	2.50	1.00	1.33	3.25	2.00	1.20	1.25	3.00	2.00	3.67	4.00	2.75	2.40	1.33	2.67	3.25	2.00	2.00	3.00	2.75	4.00
Total N	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Total N	10	10	10	10	10	10	10	10	12	12	12	12	14	14	14	14	14	14	14	14	13	13	13	13

Note:
The scale used was 1= Strongly agree, 2= Somewhat agree, 3= Neither agree nor disagree, 4= Somewhat disagree, and 5= Strongly disagree.

The following abbreviations were used for the question sets: AS = Agricultural Systems; FA = Foundations of Agriculture; LCR = Leadership and Career Readiness; NRS = Natural Resource Systems

Further analysis was conducted as it related to the respondent's answers to the universal standards for all grades, Employability Skills (See Appendix D), compared to the responses selected for the curriculum standards for each grade level the respondent indicated that they taught. Table 28 represents the comparison results for subsection 2 of the Employability skills "Demonstrate career awareness through the appropriate use of various technologies". Respondents were randomly assigned a number within each response selection based upon their response indicated using a Likert-type scale. A total of ten respondents (N= 10) chose 1= strongly agree, 3 respondents chose 2= somewhat agree (N=3), 3 respondents chose 3= Neither agree or disagree (N=3), and one respondent chose 4= somewhat disagree.

Table 28

Comparison of universal standards sub section 2 to all other responses

Respondent Choice	Respondent	K-AS	K-FA	K-LCR	K-NRS	1-AS	1-FA	1-LCR	1-NRS	2-AS	2-FA	2-LCR	2-NRS	3-AS	3-FA	3-LCR	3-NRS	4-AS	4-FA	4-LCR	4-NRS	5-AS	5-FA	5-LCR	5-NRS
1	1	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.25	1.00	1.00	1.67	1.25	1.00	1.20	1.00	1.33	1.00	1.00	1.13	1.00	1.00	1.00
	2													1.33	1.50	1.00	1.20	1.00	1.00	1.75	1.00	1.00	1.33	1.00	1.00
	3									1.00	1.00	1.00	1.00	1.67	1.75	1.50	1.60	1.00	1.33	1.25	1.67	1.38	1.67	1.75	1.00
	4	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.33	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
	5																	2.00	1.00	1.25	1.33	1.00	1.00	1.00	1.00
	6	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.33	1.00	1.00	1.00	1.00	1.00	1.00	1.00				
	7	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.33	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
	8	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	1.00	1.33	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
	9	1.00	1.00	1.00	1.00	1.25	1.00	1.00	2.00	1.00	1.00	2.33	1.00	1.33	1.00	1.25	1.20	2.33	1.00	1.50	1.00	1.13	1.67	2.50	1.00
	10	2.25	1.67	1.50	1.75	1.00	1.00	1.00	1.33	1.20	1.25	1.33	1.33	1.33	1.75	1.00	1.00	1.67	1.00	1.25	1.00	1.00	1.00	1.00	1.00
	Total	7	7	7	7	7	7	7	7	8	8	8	8	9	9	9	9	10	10	10	10	9	9	9	9
2	1					1.00	1.67	1.50	1.33	1.40	1.75	1.67	1.33	1.67	1.75	1.00	1.60	1.33	1.33	1.75	1.00	1.38	2.00	1.75	1.50
	2													2.00	1.50	1.00	1.20								
	3	1.00	1.00	1.50	1.00	1.25	1.67	1.50	1.00	1.40	1.75	1.00	1.67												
	Total	1	1	1	1	2	2	2	2	2	2	2	2	2	2	2	2	1	1	1	1	1	1	1	1
3	1	1.75	1.67	2.50	1.75																				
	2													1.33	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
	3									1.80	1.00	2.67	1.00	1.33	2.50	1.00	1.00	1.67	1.00	1.50	1.00	1.25	1.00	1.50	1.00
	Total	1	1	1	1					1	1	1	1	2	2	2	2	2	2	2	2	2	2	2	2
4	1	1.75	1.00	2.50	2.50	1.00	1.33	3.25	2.00	1.20	1.25	3.00	2.00	3.67	4.00	2.75	2.40	1.33	2.67	3.25	2.00	2.00	3.00	2.75	4.00
	Total	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Grand Total		10	10	10	10	10	10	10	10	10	12	12	12	12	14	14	14	14	14	14	14	14	13	13	13

Note:

The scale used was 1= Strongly agree, 2= Somewhat agree, 3= Neither agree nor disagree, 4= Somewhat disagree, and 5= Strongly disagree.

The following abbreviations were used for the question sets: AS = Agricultural Systems; FA = Foundations of Agriculture; LCR = Leadership and Career Readiness; NRS = Natural Resource Systems

Further analysis was conducted as it related to the respondent's answers to the universal standards for all grades, Employability Skills (See Appendix D), compared to the responses selected for the curriculum standards for each grade level the respondent indicated that they taught. Table 29 represents the comparison results for subsection 3 of the Employability skills "Model work readiness traits required for success in the workplace". Respondents were randomly assigned a number within each response selection based upon their response indicated using a Likert-type scale. A total of twelve respondents (N= 12) chose 1= strongly agree, 3 respondents chose 2= somewhat agree (N=3), 1 respondent chose 3= neither agree or disagree (N=3), and one respondent chose 4= somewhat disagree.

Table 29

Comparison of universal standards sub section 3 to all other responses

Respondent Choice	Respondent	K-AS	K-FA	K-LCR	K-NRS	1-AS	1-FA	1-LCR	1-NRS	2-AS	2-FA	2-LCR	2-NRS	3-AS	3-FA	3-LCR	3-NRS	4-AS	4-FA	4-LCR	4-NRS	5-AS	5-FA	5-LCR	5-NRS
1	1	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.25	1.00	1.00	1.67	1.25	1.00	1.20	1.00	1.33	1.00	1.00	1.13	1.00	1.00	1.00
	2													1.33	1.50	1.00	1.20	1.00	1.00	1.75	1.00	1.00	1.33	1.00	1.00
	3									1.00	1.00	1.00	1.00	1.67	1.75	1.50	1.60	1.00	1.33	1.25	1.67	1.38	1.67	1.75	1.00
	4	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.33	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
	5																	2.00	1.00	1.25	1.33	1.00	1.00	1.00	1.00
	6	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.33	1.00	1.00	1.00	1.00	1.00	1.00	1.00				
	7	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.33	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
	8	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	1.00	1.33	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
	9	1.00	1.00	1.00	1.00	1.25	1.00	1.00	2.00	1.00	1.00	2.33	1.00	1.33	1.00	1.25	1.20	2.33	1.00	1.50	1.00	1.13	1.67	2.50	1.00
	10	2.25	1.67	1.50	1.75	1.00	1.00	1.00	1.33	1.20	1.25	1.33	1.33	1.33	1.75	1.00	1.00	1.67	1.00	1.25	1.00	1.00	1.00	1.00	1.00
	11									1.80	1.00	2.67	1.00	1.33	2.50	1.00	1.00	1.67	1.00	1.50	1.00	1.25	1.00	1.50	1.00
	12	1.00	1.00	1.50	1.00	1.25	1.67	1.50	1.00	1.40	1.75	1.00	1.67												
	Total	8	8	8	8	8	8	8	8	10	10	10	10	10	10	10	10	11	11	11	11	10	10	10	10
2	1	1.75	1.67	2.50	1.75																				
	2					1.00	1.67	1.50	1.33	1.40	1.75	1.67	1.33	1.67	1.75	1.00	1.60	1.33	1.33	1.75	1.00	1.38	2.00	1.75	1.50
	3													2.00	1.50	1.00	1.20								
	Total	1	1	1	1	1	1	1	1	1	1	1	1	2	2	2	2	1	1	1	1	1	1	1	1
3	1													1.33	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
	Total													1	1	1	1	1	1	1	1	1	1	1	1
4	1	1.75	1.00	2.50	2.50	1.00	1.33	3.25	2.00	1.20	1.25	3.00	2.00	3.67	4.00	2.75	2.40	1.33	2.67	3.25	2.00	2.00	3.00	2.75	4.00
	Total	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Grand Total		10	10	10	10	10	10	10	10	12	12	12	12	14	14	14	14	14	14	14	14	13	13	13	13

Note:

The scale used was 1= Strongly agree, 2= Somewhat agree, 3= Neither agree nor disagree, 4= Somewhat disagree, and 5= Strongly disagree.

The following abbreviations were used for the question sets: AS = Agricultural Systems; FA = Foundations of Agriculture; LCR = Leadership and Career Readiness; NRS = Natural Resource Systems

Further analysis was conducted as it related to the respondent's answers to the universal standards for all grades, Employability Skills (See Appendix D), compared to the responses selected for the curriculum standards for each grade level the respondent indicated that they taught. Table 230 represents the comparison results for subsection 4 of the Employability skills "Apply the appropriate skill sets to be productive in the workplace, work independently and apply teamwork skills". Respondents were randomly assigned a number within each response selection based upon their response indicated using a Likert-type scale. A total of thirteen respondents (N= 13) chose 1= strongly agree, 3 respondents chose 2= somewhat agree (N=3), no respondents selected 3= neither agree or disagree (N=0), and one respondent chose 4= somewhat disagree.

Table 30

Comparison of universal standards sub section 4 to all other responses

Respondent Choice	Respondent	K-AS	K-FA	K-LCR	K-NRS	1-AS	1-FA	1-LCR	1-NRS	2-AS	2-FA	2-LCR	2-NRS	3-AS	3-FA	3-LCR	3-NRS	4-AS	4-FA	4-LCR	4-NRS	5-AS	5-FA	5-LCR	5-NRS
	1	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.25	1.00	1.00	1.67	1.25	1.00	1.20	1.00	1.33	1.00	1.00	1.13	1.00	1.00	1.00
	2					1.00	1.67	1.50	1.33	1.40	1.75	1.67	1.33	1.67	1.75	1.00	1.60	1.33	1.33	1.75	1.00	1.38	2.00	1.75	1.50
	3													1.33	1.50	1.00	1.20	1.00	1.00	1.75	1.00	1.00	1.33	1.00	1.00
	4									1.00	1.00	1.00	1.00	1.67	1.75	1.50	1.60	1.00	1.33	1.25	1.67	1.38	1.67	1.75	1.00
	5	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.33	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
	6													2.00	1.50	1.00	1.20								
	7																	2.00	1.00	1.25	1.33	1.00	1.00	1.00	1.00
	8	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.33	1.00	1.00	1.00	1.00	1.00	1.00	1.00				
	9	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.33	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
	10	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	1.00	1.33	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
	11	1.00	1.00	1.00	1.00	1.25	1.00	1.00	2.00	1.00	1.00	2.33	1.00	1.33	1.00	1.25	1.20	2.33	1.00	1.50	1.00	1.13	1.67	2.50	1.00
	12	2.25	1.67	1.50	1.75	1.00	1.00	1.00	1.33	1.20	1.25	1.33	1.33	1.33	1.75	1.00	1.00	1.67	1.00	1.25	1.00	1.00	1.00	1.00	1.00
	13									1.80	1.00	2.67	1.00	1.33	2.50	1.00	1.00	1.67	1.00	1.50	1.00	1.25	1.00	1.50	1.00
1	Total	7	7	7	7	8	8	8	8	10	10	10	10	12	12	12	12	12	12	12	12	11	11	11	11
	1	1	1.75	1.67	2.50	1.75																			
	2	2													1.33	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
	3	3	1.00	1.00	1.50	1.00	1.25	1.67	1.50	1.00	1.40	1.75	1.00	1.67											
2	Total	N	2	2	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	1	1	1.75	1.00	2.50	2.50	1.00	1.33	3.25	2.00	1.20	1.25	3.00	2.00	3.67	4.00	2.75	2.40	1.33	2.67	3.25	2.00	2.00	3.00	2.75
4	Total	N	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Grand Total		10		10	10	10	10	10	10	10	10	12	12	12	12	14	14	14	14	14	14	14	14	13	13

Note:

The scale used was 1= Strongly agree, 2= Somewhat agree, 3= Neither agree nor disagree, 4= Somewhat disagree, and 5= Strongly disagree.

The following abbreviations were used for the question sets: AS = Agricultural Systems; FA = Foundations of Agriculture; LCR = Leadership and Career Readiness; NRS = Natural Resource Systems

Objective 3: Describe the educator's level of certification, as it pertains, to the endorsement created by the Georgia Professional Standards Commission and their desire to earn the Elementary Agriculture endorsement/ certification.

With the GEAPP only in its second year of implementation in Georgia schools, certification in elementary agricultural education is not required at this time. The Georgia Professional Standards Commission has approved an endorsement/certification for P-5 Elementary Agriculture. The respondents were asked the question "Do you have your elementary agriculture certification?". Of the 18 respondents, three indicated that they had the certification (*f*= 3, %=16.7). Fourteen indicated that do not have the certification (*f*= 14, %=77.8). A total of seventeen educators responded to this question (*f*= 17, %=94.4). One respondent did not answer the question (*f*=1, %=5.6). The next question then asked the respondents to please indicate their plan for their elementary agriculture certification. Respondents were given two options; that they planned to add the endorsement to their certification, or they had no interest in adding the endorsement to their certification. Twelve educators said that they planned to add the endorsement (*f*= 12, %=66.7) and five respondents indicated that they have no interest, nor do they plan on getting the endorsement to their certification (*f*= 5, %= 27.8). The data was further analyzed with a Chi Squared test of Association (2 X 2) which showed that there is no significant association between the two questions (χ^2 (1, N=17) =1.52, p=.22).

Table 31a

Educator's responses to level of certification for and the desire to seek the Elementary Agriculture Endorsement/Certification

Question: Do you have your elementary agriculture certification?		
Response Options	*f*	*%*
Yes, I already have the elementary agricultural endorsement on my certificate.	3	16.7
No, I do not have the elementary agricultural endorsement on my certificate.	14	77.8
No Response	1	5.6

Table 31b

Educator's responses to level of certification for and the desire to seek the Elementary Agriculture Endorsement/Certification

Question: Please indicate your plan for your elementary agricultural education certification.		
Response Options	*f*	*%*
I plan to attend the classes and add the elementary agricultural education endorsement to my certificate	12	66.7
I have no interest in adding the elementary agricultural endorsement to my certificate	5	7.8
No Response	1	5.6

Objective 4: Describe the educator's pathway to becoming an Elementary Agriculture Teacher.

The survey respondents were asked to describe their pathway to becoming a GEAPP teacher. There were eight options offered: 1= undergraduate teacher education program with agriculture education certification, 2= graduate program with teacher certification, 3= combined undergraduate and graduate program, 4= substitute teaching that led to a permanent position, 5= alternate teacher certification, 6= no prior teaching experience, but has a degree in an agriculturally related field, 7= certified in a content area outside of agriculture education, and 8= no prior teaching experience and do not have a degree in an agriculturally related field. None selected option 1 "undergraduate teacher education program with agriculture education certification", option 4 "substitute teaching that led to a permanent position, or option 7 "certified in a content area outside of agriculture education" (*f*=0, %=0.0). Five teachers selected option 2 "graduate program with teacher certification" (*f*=5, %=27.8), five teachers selected option 3 "combined undergraduate and graduate program" (*f*=5, %=27.8), one teacher selected option 5 "alternate teacher certification" (*f*=1, %=5.6), one teacher selected option 6 "no prior teaching experience" (*f*=1, %=5.6), and five teachers selected option 8 "no prior teaching experience and do not have a degree in an agriculturally related field" (*f*=5, %=27.8). One respondent chose not to respond to the question (*f*=1, %=5.6)

Table 32

Educator's pathway to becoming a GEAPP teacher

Response Options	*f*	*%*
1 = undergraduate teacher education program with agriculture education certification	0	0.0
2 = graduate program with teacher certification	5	27.8
3 = combined undergraduate and graduate program	5	27.8
4 = substitute teaching that led to a permanent position	0	0.0
5 = alternate teacher certification	1	5.6
6 = no prior teaching experience, but has a degree in an agriculturally related field	1	5.6
7 = certified in a content area outside of agriculture education	0	0.0
8 = no prior teaching experience and do not have a degree in an agriculturally related field	5	27.8

Objective 5: Describe the pilot programs involvement with existing school-based agriculture education programs offered in the school system.

GEAPP educators were asked to respond to the question "What school based agricultural education programs are offered in your school system?" Respondents were allowed to select all that apply with the following options: 1= Elementary school, 2= Middle School, 3= High School, 4= Young Farmer, and 5= 4H. Two respondents selected only option 1 "Elementary school" (*f*=2, %=11.1), one respondent selected options 1 and 2 "Elementary school and Middle School" (*f*=1, %=5.6), one respondent selected options 1, 2, and 3 "Elementary school, Middle School, and High School" (*f*=1, %=5.6), one respondent selected options 1, 2, 3, 4 "Elementary school, Middle School, High School, and Young Farmer" (*f*=1, %=5.6), six respondents indicated all options 1 through 5 "Elementary school, Middle School, High School, Young Farmer, and 4H" (*f*=6, %=33.3), two respondents selected option 1, 2, 3, and 5 "Elementary school, Middle School, High School and 4H" (*f*=2, %=11.1), one respondent selected options 1 and 3 "Elementary school and High School" (*f*=1, %=5.6), one respondent selected options 1, 3, and 5 "Elementary school, High School, and 4H" (*f*=1, %=5.6), one respondent selected options 1 and 5 "Elementary school and 4H" (*f*=1, %=5.6), and one respondent selected option 5 "4H" (*f*=1, %=5.6). All those surveyed answered this question (*f*=18, %= 100.0).

Table 33

Response options for school-based agriculture options offered in the school system

Response Options
1= Elementary school
2= Middle School
3= High School
4= Young Farmer
5= 4H

Table 34

Teacher responses to school-based agriculture options offered in the school system

Response Options	*f*	*%*
Option 1	2	11.1
Options 1, 2	1	5.6
Options 1, 2, 3	1	5.6
Options 1, 2, 3, 4	1	5.6
Options 1, 2, 3, 4, 5	6	33.3
Options 1, 2, 3, 5	2	11.1
Options 1, 3	1	5.6
Options 1, 3, 5	1	5.6
Options 1, 5	1	5.6
Option 5	1	5.6

Objective 6: Describe the educators use of current available elementary agriculture resources.

The foundation of the GEAPP was largely created in a similar fashion to the Ag in the Classroom curriculum which is accessible online. GEAPP educators also have access to a Google Drive resource folder. The survey respondents were asked the question, "How often do you use the GA elementary agriculture Google Drive resource folder?" Their options for responses were as follows: 1= daily, 2= weekly, 3= monthly, 4= as needed, 5= occasionally, 6= never. Seventeen of those surveyed answered this question (*f*=17, %=94.4), one chose not to answer (*f*=1, %=5.6). The results of the question are as follows: one respondent chose 1= daily (*f*=1, %=5.6), five respondents selected 2= weekly (*f*=5, %=27.8), two selected 3= monthly (*f*=2, %=11.1), seven selected option 4= as needed (*f*=7, %=38.9), two respondents selected 5= occasionally (*f*=2, %=11.1), and no respondents selected 6= never (*f*=0, %=0.0).

Additionally, the educators were asked the question "How often do you integrate Ag in the Classroom content into your lessons?". Their options for responses were as follows: 1= daily, 2= weekly, 3= monthly, 4= as needed, 5= occasionally, 6= never. All eighteen respondents answered this question (*f*=18, %= 100.0). Three selected 1= daily (*f*=3, %=16.7), four selected 2= weekly (*f*=4, %=22.2), four selected 3= monthly (*f*=4, %=22.2), four selected 4= as needed (*f*=4, %=22.2), one selected 5= occasionally (*f*=1, %=5.6), and one selected 6= never (*f*=1, %=5.6). The data was further analyzed with a Chi Squared test of Association (2 X 2) which showed that there is no significant association between the two questions (χ^2 (20, N=17) =24.25, p=.23).

Table 35

Responses to "How often do you use the Georgia elementary agriculture Google Drive resource folder?"

Response Options	*f*	*%*
1 = Daily	1	5.6
2 = Weekly	5	27.8
3 = Monthly	2	11.1
4 = As Needed	7	38.9
5 = Occasionally	2	11.1
6 = Never	0	0.0

Table 36

Responses to "How often do you integrate Ag in the Classroom content into your lessons?"

Response Options	*f*	*%*
1 = Daily	3	16.7
2 = Weekly	4	22.2
3 = Monthly	4	22.2
4 = As Needed	4	22.2
5 = Occasionally	1	5.6
6 = Never	1	5.6

Objective 7: Describe stakeholder collaboration within the pilot program community.

The survey respondents were asked a set of questions regarding stakeholder collaboration within the pilot program community; more specifically, engaging with their local Farm Bureau, 4H, and Extension office. Each one of these questions had the response options of: 1= daily, 2= weekly, 3= monthly, 4= as needed, 5= occasionally, and 6= never. The question was asked "How often do you collaborate with your local Georgia Farm Bureau office?". Seventeen of those surveyed answered this question (*f*=17, %=94.4), one chose not to answer (*f*=1, %=5.6). None of those surveyed selected 1=daily (*f*=0, %=0.0), two selected 2= weekly (*f*=2, %=11.1), seven responded 3= monthly (*f*=7, %=38.9), three selected 4= as needed (*f*=3, %=16.7), four selected 5= occasionally (*f*=4, %=22.2), and one selected 6= never (*f*=1, %=5.6). The next question was "How often do you collaborate with the Georgia 4H program?" All eighteen respondents answered this question (*f*=18, %= 100.0). None of the respondents selected options 1= daily or 2= weekly (*f*=0, %=0.0), five selected 3= monthly (*f*=5, %=27.8), five selected 4= as needed (*f*=5, %=27.8), and six selected 5= occasionally (*f*=6, %=33.3), and one selected 6= never (*f*=1, %=5.6). The last question involving stakeholder collaboration was "How often do you collaborate with the Georgia Cooperative Extension program?" Seventeen of those surveyed answered this question (*f*=17, %=94.4), one chose not to answer (*f*=1, %=5.6). None of the respondents selected options 1= daily or 2= weekly (*f*=0, %=0.0), one selected 3= monthly (*f*=1, %=5.6), six selected 4= as needed (*f*=6, %=33.3), seven selected 5= monthly (*f*=7, %=38.9), and three selected 6= never (*f*=3, %=16.7).

Table 37a

Responses to stakeholder collaboration within the pilot program community involving their local Farm Bureau.

Response Options	*f*	*%*
1 = Daily	0	0.0
2 = Weekly	2	11.1
3 = Monthly	7	38.9
4 = As Needed	3	16.7
5 = Occasionally	4	22.2
6 = Never	1	5.6

Table 37b

Responses to stakeholder collaboration within the pilot program community involving 4H.

Response Options	*f*	*%*
1 = Daily	0	0.0
2 = Weekly	0	0.0
3 = Monthly	5	27.8
4 = As Needed	5	27.8
5 = Occasionally	6	33.3
6 = Never	1	5.6

Table 37c

Responses to stakeholder collaboration within the pilot program community involving Cooperative Extension

Response Options	*f*	*%*
1 = Daily	0	0.0
2 = Weekly	0	0.0
3 = Monthly	1	5.6
4 = As Needed	6	33.3
5 = Occasionally	7	38.9
6 = Never	3	16.7

Chapter Summary

Chapter four presented the findings based upon the objectives that guided the research. They are:

1. Describe the grade levels being taught in the pilot program schools.
2. Describe the perceived importance of the current approved Georgia Department of Education Elementary Agriculture Pilot Program (GEAPP) curriculum standards.
3. Describe the educator's level of certification, as it pertains, to the endorsement created by the Georgia Professional Standards Commission and their desire to earn the Elementary Agriculture endorsement/certification.
4. Describe the educator's pathway to becoming an Elementary Agriculture Teacher.
5. Describe the pilot programs involvement with existing school-based agriculture education programs offered in the school system.
6. Describe the educators use of current available elementary agriculture resources.
7. Describe stakeholder collaboration within the community of the pilot program.

The findings in this chapter provided a better understanding of teacher perceptions the GEAPP standards. It further described, the teacher's current certification, their desire to earn the elementary endorsement to their certification, and their pathway to teaching. The research also provided an insight into the educators use of resources found in the Google Drive folder and AITC along with stakeholder collaboration within the community of the pilot program. The findings in chapter four are further discussed in chapter five along with conclusions and recommendations based upon the data.

Chapter 5

Summary, Conclusions, Recommendations

Introduction

The Georgia Elementary Agriculture Pilot Program (GEAPP) curriculum standards were created by a task force of elementary and agriculture teachers. The task force met several times over the 2018-2019 school year to develop the curriculum standards that would be implemented for the pilot elementary agriculture education program. Grade level elementary standards were evaluated from English/Language Arts, Social Studies, and Science. Agriculture teachers were assigned to a respective grade levels to assist the groups in giving an agricultural approach to existing standards. The purpose of the curriculum standards were to further reinforce the existing standards and to be another tool to help improve standardized test scores.

After two years of implementation, it was paramount for research to be conducted of the standards as the GEAPP enters its final year of implementation. This research pertained specifically to the program for future growth and development. Expansion is already happening as more schools are requesting to be added to the pilot program before the initial three years have concluded. The findings of this study could also be used by other states to meet the needs of their students, as interest has been shown to pass similar legislation to develop elementary agriculture programs in other areas throughout the United States.

Furthermore, The purpose of this study was to review the grade level curriculum standards for the GAEPP and factors contributing to the program such as collaboration with community stakeholders and other existing Agriculture entities such as Middle School Agriculture Programs, High School Agriculture Programs, , County Farm Bureaus, and Extension/ 4-H.

Summary of the Study

Research objectives were developed to guide this study. Questions were developed and implemented in a Qualtrics quantitative questionnaire to gauge the response of GEAPP educators in Georgia. The research objectives were:

1. Describe the grade levels being taught in the pilot program schools.
2. Describe the perceived importance of the current approved Georgia Department of Education Elementary Agriculture Pilot Program curriculum standards.
3. Describe the educator's level of certification, as it pertains, to the endorsement created by the Georgia Professional Standards Commission. And their desire to earn the Elementary Agriculture endorsement/ certification.
4. Describe the educator's pathway to becoming an Elementary Agriculture Teacher.
5. Describe the pilot programs involvement with existing school-based agriculture education programs offered in the school system.
6. Describe the educators use of current available elementary agriculture resources.
7. Describe stakeholder collaboration within the community of the pilot program.

The research objectives provided the data necessary to gain a better understanding of the current state of the GEAPP and recommendations to improve the program as it moves forward.

Conclusions and Discussion

The conclusions and discussion presented were based on the themes that emerged upon completion of data analysis and review.

Conclusion: Third and fourth grade are the top two grades taught in the GEAPP.

The GEAPP curriculum can be taught to students in kindergarten through fifth grade. During the pilot phase, schools have the choice to select the grade levels that best suit the needs of their school but also their student body. The study found that third and fourth grade were the top two grades taught, followed by fifth, second, first, and kindergarten, respectively.

Conclusion: No significance was found based upon the data analysis of the universal standards of Employability Skills.

There is only one set of standards that apply to all grades K-5 in the GEAPP. They are labelled "Employability Skills". All teachers were asked to rate the universal standards for all grade levels which are labelled, Employability Skills, using Likert-type scales based on Borich's Needs Assessment Model. The scale was as follows: 1= Strongly agree, 2= Somewhat agree, 3= Neither agree nor disagree, 4= Somewhat disagree, and 5= Strongly disagree. No significance was found based upon the data analysis. The educators all agree that the curriculum standards for employability skills were all relevant.

Conclusion: No significance was found based upon the data analysis of the kindergarten standards.

Teachers were asked to select the grade level they taught. Using skip logic, teachers would only answer questions to rate the standards for the grade levels they taught. All grade

level standards are divided into 4 categories: Agricultural Systems, Foundations of Agriculture, Leadership and Career Readiness, and Natural Resource Systems. Subsections of standards are found within each category. The same structure of rating was used for the kindergarten standards as was used in the universal standards for all grade levels. No significance was found based upon the data analysis. The educators all agree that the curriculum standards for kindergarten were all relevant.

Conclusion: No significance was found based upon the data analysis of the first grade standards.

Using skip logic, only first grade teachers rated the grade level standards. Grade level standards are divided into 4 categories: Agricultural Systems, Foundations of Agriculture, Leadership and Career Readiness, and Natural Resource Systems. Subsections of standards are found within each category. No significance was found based upon the data analysis. The educators all agree that the curriculum standards for first grade were all relevant.

Conclusion: No significance was found based upon the data analysis of second grade standards.

Using skip logic, only second grade teachers rated the grade level standards. Grade level standards are divided into 4 categories: Agricultural Systems, Foundations of Agriculture, Leadership and Career Readiness, and Natural Resource Systems. Subsections of standards are found within each category. No significance was found based upon the data analysis. The educators all agree that the curriculum standards for second grade were all relevant.

Conclusion: No significance was found based upon the data analysis of third grade standards.

Using skip logic, only third grade teachers rated the grade level standards. Grade level standards are divided into 4 categories: Agricultural Systems, Foundations of Agriculture, Leadership and Career Readiness, and Natural Resource Systems. Subsections of standards are found within each category. No significance was found based upon the data analysis. The educators all agree that the curriculum standards for third grade were all relevant.

Conclusion: No significance was found based upon the data analysis of fourth grade standards.

Using skip logic, only fourth grade teachers rated the grade level standards. Grade level standards are divided into 4 categories: Agricultural Systems, Foundations of Agriculture, Leadership and Career Readiness, and Natural Resource Systems. Subsections of standards are found within each category. No significance was found based upon the data analysis. The educators all agree that the curriculum standards for fourth grade were all relevant.

Conclusion: No significance was found based upon the data analysis of fifth grade standards.

Using skip logic, only fifth grade teachers rated the grade level standards. Grade level standards are divided into 4 categories: Agricultural Systems, Foundations of Agriculture, Leadership and Career Readiness, and Natural Resource Systems. Subsections of standards are found within each category. No significance was found based upon the data analysis. The educators all agree that the curriculum standards for fifth grade were all relevant.

Conclusion: Most of the GEAPP teachers are not certified or have the endorsement for elementary agriculture education.

With the GEAPP only in its second year, certification is not required at this time. The Georgia Professional Standards Commission has approved an endorsement/certification for prekindergarten through fifth grade Elementary Agriculture. Teachers were asked about their current certification status, as to whether they had the endorsement for elementary agriculture education. The majority of those currently teaching within the GEAPP do not have the certification/endorsement for elementary agriculture.

Conclusion: Most of the teachers in the GEAPP schools entered teaching through traditional means.

The survey respondents were asked to describe their pathway to becoming a GEAPP teacher. Of the choices offered, more than half of the teachers indicated that they entered teaching through a graduate program with teacher certification or a combined undergraduate/graduate program. The second largest group of responses indicated that they entered teaching with no prior experience and do not have a degree in an agriculture related field.

Conclusion: GEAPP schools are predominately found in counties with agriculture programs offered to all grade levels and with adult education programs.

GEAPP teachers were asked to list all agricultural education opportunities offered in their county. A third of those teachers responded that agriculture education is now offered at the elementary, middle, and high school level with 4-H education integration and Young Farmer education offered to adults as well.

Conclusion: Teachers are using the resources offered through the GEAPP Google Drive folder and AITC.

The foundation of the GEAPP was largely created in a similar fashion to the Ag in the Classroom curriculum which is accessible online. GEAPP educators also have access to a Google Drive resource folder. The teachers were asked how often they use these resources. The majority of the respondents are using the resources on a weekly, monthly, and as needed basis.

Conclusion: The majority of GEAPP have a relationship with stakeholders.

The survey respondents were asked a set of questions regarding stakeholder collaboration within the pilot program community; more specifically, engaging with their local Farm Bureau, 4-H, and Extension office. Almost half of the teachers engage with their county Farm Bureau monthly based on their responses. More than half indicated that they were involved with 4-H on a monthly or as needed basis. More than half indicated that they were involved with Cooperative Extension when needed or occasionally.

Recommendations

Based upon the findings and conclusions of the study, the following recommendations were determined. A qualitative analysis of the grade level curriculum standards should be conducted in the future. Originally, this was the researcher's plan for data collection but the outbreak of COVID-19 in 2020 put restrictions on previously scheduled gatherings of GEAPP professionals. In-person gatherings were not possible so quantitative, internet based means were utilized.

Further analysis could be conducted based upon the data regarding the educator's desire to earn the elementary agriculture certification/endorsement. Several teachers indicated that they have no desire to get it; however, they are currently teaching in the GEAPP. Is this decision

based upon the qualifications set by the Georgia Professional Standards Commission or are their other factors influencing this choice?

Resources for the Georgia Elementary Agriculture Education program are currently limited. As the programs continues to grow and the number of students engaged in this curriculum expands, it is necessary for the GEAPP Google Drive folder and Ag In the Classroom materials be updated and aligned to meet the need of instructors. The literature is convincing that engaging, real-world lessons are what convey the most knowledge to students. Through hands-on activities, educators will be able to meet the needs of their students.

Further research needs to be conducted in the field of agriculture education for elementary students. Only one research study was found during the literature review of elementary education. It was over the subject of Ag in the Classroom in Georgia. The study is almost two decades old. If Agricultural Literacy is a need outlined by the NAAE, then researchers need to focus on getting the data to measure the agricultural knowledge of all students, including elementary aged pupils.

It is the belief of the researcher that elementary agriculture education needs to expand into other state and regions of the United States. Georgia Senate Bill 330 brought about exciting changes for agricultural education, but only educating the elementary aged children within one state will not bring agricultural literacy to the United States. The work is just beginning in the field of elementary agricultural education.

Chapter Summary

Chapter five was a look back on the results of the study and the conclusions found from analysis of the data. In closing, nothing of any significance was found from the survey data. Moreover, qualitative means of questioning GEAPP educators is recommended as the next step

to get verbalized feedback of those engaging with the standards and elementary students in Georgia. In order to best serve elementary aged students, curriculum needs to be constantly developed and edited to meet the demands of an ever-evolving field such as agriculture. The research in elementary education is only beginning. There is hope that other states will follow Georgia's lead in the implementation of agriculture education standards for elementary aged students. The future is in the hands of our children for all things, but especially agriculture as they must strive to feed a global population growing exponentially that is expected to be over 9 billion people in the next three decades.

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Appendix A: IRB Approval Documentation

Auburn University Human Research Protection Program

EXEMPTION REVIEW APPLICATION

For information or help completing this form, contact: **THE OFFICE OF RESEARCH COMPLIANCE**
Phone: 334-844-5966 **Email:**IRBAdmin@auburn.edu

Submit completed application and supporting material as one attachment to IRBsubmit@auburn.edu.

1. PROJECT IDENTIFICATION **Today'sDate** January 7, 2021

a. Project Title Piloting the Future of Agriculture Education: The Educator's Perspective of the Implementation of the Georgia Elementary Agriculture Education Pilot Program Curriculum Standards

b. Principal Investigator Tracy E. Champagne Degree(s) AA, AAS, BS, MEd, SEd
Rank/Title Doctoral Candidate Department/School Curriculum & Teaching, College of Education
Phone Number 772-215-0867 AU Email tzc0052@auburn.edu

Faculty Principal Investigator (required if PI isa student) James Lindner
Title Professor Department/School Curriculum & Teaching
Phone Number 334-844-6797 AU Email jrl0037@auburn.edu

Dept Head Dr. Marklyn Strutchens Department/School Curriculum & Teaching
Phone Number 334-844-6838 AU Email strutme@auburn.edu

c. Project Personnel (other PI) – Identify all individuals who will be involved with the conduct of the research and include their role on the project. Role may include design, recruitment, consent process, data collection, data analysis, and reporting. Attach a table if needed for additional personnel.

Personnel Name Degree (s)
Rank/Title Department/School
Role
AU affiliated? ☐ YES ☐ NO If no, name ofhome institution
Plan for IRB approval for non-AU affiliated personnel?

Personnel Name Degree (s)
Rank/Title Department/School
Role
AU affiliated? ☐ YES ☐ NO If no, name ofhome institution
Plan for IRB approval for non-AU affiliated personnel?

Personnel Name Degree (s)
Rank/Title Department/School
Role
AU affiliated? ☐ YES ☐ NO If no, name ofhome institution
Plan for IRB approval for non-AU affiliated personnel?

d. Training – Have all Key Personnel completed CITI human subjects training (including elective modules related to this research) within the last 3 years? YES [x] NO ☐

The Auburn University Institutional Review Board has approved this Document for use from 01/06/2021 to ----------
Protocol # 21-020 EX 2101

AU Exemption Form Version 07.14.2020

Version Date (date document created): January 7, 2021

e. Funding source – Is this project funded by the investigator(s)? ☑ YES ☐ NO
Is this project funded by AU? ☐ YES ☑ NO If YES, identify source _____
Is this project funded by an external sponsor? ☐ YES ■ No If YES, provide the name of the sponsor, type of sponsor (governmental, non-profit, corporate, other), and an identification number for theaward.
Name_____Type_____Grant # _____

f. List other AU IRB-approved research studies and/or IRB approvals from other institutions that are associated with this project.

2. Mark the category or categories below that describe the proposedresearch:

☐ 1. Research conducted in established or commonly accepted educational settings, involving normal educational practices. The research is not likely to adversely impact students' opportunity to learn or assessment of educators providing instruction. 104(d)(1)

■ 2. Research only includes interactions involving educational tests, surveys, interviews, public observation if at least ONE of the following criteria. (The research includes data collection only; may include visual or auditory recording; may NOT include intervention and only includes interactions). **Mark the applicable sub-category below (i, ii, or iii).** 104(d)(2)

■ (i) Recorded information cannot readily identify the participant (directlyorindirectly/linked); **OR**
- surveys and interviews: no children;
- educational tests or observation of public behavior: can only include children when investigators do not participate in activities being observed.

☐ (ii) Any disclosures of responses outside would not reasonably place participant at risk; **OR**

☐ (iii) Information is recorded with identifiers or code linked to identifiers and IRB conducts limited review; no children. **Requires limited review by the IRB.***

☐ 3. Research involving Benign Behavioral Interventions (BBI)** through verbal, written responses (including data entry or audiovisual recording) from adult subjects who prospectively agree and ONE of the following criteria is met. (This research does not include children and does not include medical interventions. Research cannot have deception unless the participant prospectively agrees that they will be unaware of or misled regarding the nature and purpose of the research)
Mark the applicable sub-category below (A, B, or C). 104(d)(3)(i)

☐ **(A)** Recorded information cannot readily identify the subject (directly or indirectly/linked); **OR**

☐ **(B)** Any disclosure of responses outside of the research would not reasonably placesubject at risk; **OR**

☐ **(C)** Information is recorded with identifiers and cannot have deception unless participant prospectively agrees. **Requires limited review by the IRB.***

☐ 4. Secondary research for which consent is not required: use of identifiable information or identifiable bio-specimen that have been or will be collected for some other 'primary' or 'initial' activity, if one of the following criteria is met. Allows retrospective and prospective secondary use. **Mark the applicable sub-category below (I, ii, iii, or iv).** 104(d)(4)

☐ (i) Biospecimens or information are publically available;

☐ (ii) Information recorded so subject cannot readily be identified, directlyorindirectly/linked; investigator does not contact subjects and will not re-identify thesubjects;OR

☐ (iii) Collection and analysis involving investigators use of identifiable health information when use is regulated by HIPAA "health care operations" or "research or "public health activities and purposes" (does not include biospecimens (only PHI and requires federal guidance on how to apply); OR

☐ (iv) Research information collected by or on behalf of federal government usinggovernment generated or collected information obtained for non-researchactivities.

☐ 5. Research and demonstration projects which are supported by a federal agency/department AND designed to study and which are designed to study, evaluate, or otherwise examine: (i) public benefit or service programs; (ii) procedures for obtaining benefits or services under those programs;(iii) possible changes in or alternatives to those programs or procedures; or (iv) possible changes in methods or levels of payment for benefits or services under those programs. (must be posted on a federal web site). 104(d)(5) (must be posted on a federal web site)

☐ 6. Taste and food quality evaluation and consumer acceptance studies, (i) if wholesome foods without additives are consumed or (ii) if a food is consumed that contains a food ingredient at or below the level and for a use found to be safe, or agricultural chemical or environmental contaminant at or below the level found to be safe, by the Food and Drug Administration or approved by the Environmental Protection Agency or the Food Safety and Inspection Service of the U.S. Department of Agriculture. The research does not involve prisoners as participants. 104(d)(6)

New exemption categories 7 and 8: Both categories 7 and 8 require Broad Consent. (Broad consent is a new type of informed consent provided under the Revised Common Rule pertaining to storage, maintenance, and secondary research with identifiable private information or identifiable biospecimens. Secondary research refers to research use of materials that are collected for either research studies distinct from the current secondary research proposal, or for materials that are collected for non-research purposes, such as materials that are left over from routine clinical diagnosis or treatments. Broad consent does not apply to research that collects information or biospecimens from individuals through direct interaction or intervention specifically for the purpose of the research.) **The Auburn University IRB has determined that as currently interpreted, Broad Consent is not feasible at Auburn and these 2 categories WILL NOT BE IMPLEMENTED at this time.**

***Limited IRB review* – the IRB Chairs or designated IRB reviewer reviews the protocol to ensure adequate provisions are in place to protect privacy and confidentiality.**

****Category 3 – Benign Behavioral Interventions (BBI)* must be brief in duration, painless/harmless, not physically invasive, not likely to have a significant adverse lasting impact on participants, and it is unlikely participants will find the interventions offensive or embarrassing.**

3. PROJECT SUMMARY

a. Does the study target any special populations? (Mark applicable)

Minors (under 18 years of age)	☐ YES ☑ NO
Pregnant women, fetuses, or any products of conception	☐ YES ☑ NO
Prisoners or wards (unless incidental, not allowed for Exempt research)	☐ YES ☑ NO
Temporarily or permanently impaired	☐ YES ☑ NO

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 test. 42 CFR 46.102(i)

c. Does the study involve any of the following?

Procedures subject to FDA regulations (drugs, 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 which 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 alcohol use.	☐ YES ☑ NO
Deception of participants	☐ YES ☑ NO

4. Briefly describe the proposed research, including purpose, participant population, recruitment process, consent process, research procedures and methodology.

The purpose of this study is to examine teacher perceptions of the Georgia Elementary Agriculture Pilot Porgram curriculum standards. The population of this study is current Georgia elementary agriculture teachers identified by the PI. Data will be collected through an online questionnaire using the Qualtrics platform. The questoinnaire will be live for two weeks. The research instrument should only take participants approximately 10 minutes to answer. Standard research methods will be used. Participants will be emailed an information letter with an opportunity to participate by completing the questionnaire or declining by not completing it. All contact with participants will come from the PI.

5. Waivers

Check any waivers that apply and describe how the project meets the criteria for the waiver. Provide the rationale for the waiver request.

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

All retrospective information will be de-identified.

The PI will not track the responses of participants of the survey instrument. All participants will be over the age of 18.

6. **Describe how participants/data/specimens will be selected. If applicable, include gender, race, and ethnicity of the participant population.**

Participants will be purposefully selected to include current elementary agriculture teachers in Georgia. Participant contact information will be collected through the publicly available Georgia Agricultural Educator Teacher Directory.

7. **Does the research involve deception? ☐ YES ☒ NO If YES, please provide the rationale for deception and describe the debriefing process.**

8. **Describe why none of the research procedures would cause a participant either physical or psychological discomfort or be perceived as discomfort above and beyond what the person would experience in daily life.**

Risks in this study are minimal and are no more than encountered in every day life. Participants will receive no direct benefits for their participation other than awareness of the content covered in the questionnaire.

9. **Describe the provisions to maintain confidentiality of data, including collection, transmission, and storage.**

Data will be collected using the email link from Qualtrics. Entering the Qualtrics survey and answering questions will serve as consent. No identifiable information will be collected. Qualtrics uses encrypted servers and the data will be stored within this system.

10. Describe the provisions included in the research to project the privacy interests of participants (e.g., others will not overhear conversations with potential participants, individuals will not be publicly identified or embarrassed).

No sensitive subject matter will be used. There will be no audio or video collected.

11. Will the research involve interacting (communication or direct involvement) with participants?
☒ **YES** ☐ **NO If YES, describe the consent process and information to be presented to subjects. This includes identifying that the activities involve research; that participation is voluntary; describing the procedures to be performed; and the PI name and contact information.**

While the PI may not interact directly with the participants, however the research does in the form of the recruitment email, information letter, and survey.

The research will be conducted through a Qualtrics survey, participation is voluntary, participants consent through taking the survey. The PI for this study is Tracy Champagne; tzc0052@auburn.edu; 772-215-0867.

12. Additional Information and/or attachments.

In the space below, provide any additional information you believe may help the IRB review of the proposed research. If attachments are included, list the attachments below. Attachments may include recruitment materials, consent documents, site permissions, IRB approvals from other institutions, etc.

The attachments include CITI training certificates, the online information letter for electronic survey, email recruitment, and sample questionnaire.

Principal Investigator's Signature _____ **Date** January 7, 2021

If PI is a student, Faculty Principal Investigator's Signature James Lindsey **Date** 1.7.21

Department Head's Signature Marilyn Stutchens **Date** 1/07/2021

Appendix B: Research Invitation Email

E-MAIL INVITATION FOR ON-LINE SURVEY

Dear Elementary Agriculture Education Teacher,

We are conducting a study and invite you to participate to investigate the current elementary agriculture education standards in Georgia. The study is being conducted as a survey. This study is best taken on a desktop, laptop, or tablet.

Participants will be asked to complete an item response survey requiring ten minutes of your time. To mitigate risk potential your personally identifiable information will not be collected. No compensation will be provided and benefits include scholastic understanding of the elementary agriculture education standards in Georgia.

If you would like to know more information about this study, an information letter can be obtained by selecting the link below. If you decide to participate after reading the letter, you can access the survey from a link within this email.

Please do not hesitate to contact Tracy Champagne if you have any questions about this research project.

Thank you,

Tracy Champagne
Doctoral Candidate
Auburn University
tzc0052@auburn.edu
772-215-0867

James Lindner, PhD
Professor
Auburn University
jrl0039@auburn.edu
334-844-6797

Appendix C: Informed Consent Letter

AUBURN
UNIVERSITY

COLLEGE OF EDUCATION
CURRICULUM AND TEACHING

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

INFORMATION LETTER

For a Research Study entitled

Piloting the Future of Agriculture Education: The Educators Perspective of the Implementation of the Georgia Elementary Agriculture Education Pilot Program Curriculum Standards.

You are invited to participate in a research study to review the current Georgia Elementary Agriculture Pilot Program Curriculum Standards. The study is being conducted by Tracy Champagne, PhD Candidate, under the direction of Professor James Lindner in the Auburn University Department of Curriculum and Teaching's Agriscience Education Program. You are invited to participate because you are an Elementary Agriculture Teacher in Georgia over the age of 18.

What will be involved if you participate?
Your participation is voluntary. If you decide to participate, you will be asked to complete a questionnaire via the Qualtrics online platform. Your total time invested in the study will be approximately ten to fifteen minutes.

Are there any risks or discomforts?
The risks are minimal and are no more than encountered in everyday life. To minimize these risks, data will be collected anonymously and presented only in aggregate form. No direct links to your responses will be collected.

Are there any benefits to yourself or others?
Participants do not directly benefit from participating in this study. Benefits to others could include modifications to the curriculum standards to better serve the Georgia Elementary Agriculture Pilot Program teachers.

Will you receive compensation for participating?
You will not receive any compensation for your participation.

Are there any costs associated with the research study?
There are no costs associated with your participation other than your time.

If you change your mind about participating, you can withdraw at any time by not submitting the questionnaire by closing your browser window. Once you have submitted the anonymous data, it cannot be withdrawn because it will become unidentifiable. Your decision to participate will not jeopardize your future relations with Auburn University, the College of Education, the Department of Curriculum and Teaching, and the Agriscience Education Program.

5040 HALEY CENTER
AUBURN, AL 36849-5212

TELEPHONE:
334-844-4434

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334-844-6789

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Any data obtained in connection with this study will remain anonymous. We protect your privacy and the data you provide by maintaining your anonymous responses and insuring there are no connections between your responses and you. At the conclusion of this study, all data collected will be destroyed. Information collected through your participation may be used in presentations at academic academic conferences, journals, other publications, and student research outlets (dissertations, thesis).

If you have any questions about this study, please contact Tracy Champagne at tzc0052@auburn.edu or Professor James Lindner at jrl0039@auburn.edu, 334-844-6797.

If you have questions concerning 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 email IRBadmin@auburn.edu

HAVING READ THE INFORMATION PROVIDED, YOU MUST DECIDE IF YOU WANT TO PARTICIPATE IN THIS RESEARCH PROJECT. IF YOU DECIDE TO PARTICIPATE, THE DATA YOU PROVIDE WILL SERVE AS YOUR AGREEMENT TO DO SO.

Tracy Champagne
PhD Candidate
January 7, 2021

James Lindner, PhD
Professor
January 7, 2021

5040 HALEY CENTER
AUBURN, AL 36849-5212

TELEPHONE:
334-844-4434

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The Auburn University Institutional Review Board has approved this document for use from _____ to _____, Protocol #_____

The Auburn University Institutional Review Board has approved this Document for use from 01/06/2021 to ---------- Protocol # 21-020 EX 2101

Appendix D: Official Research Instrument

Tracy Champagne Official Dissertation Instrument

Start of Block: Introduction

Q1 The Educators Perspective of the Implementation of the Georgia Elementary Agriculture Education Pilot Program Curriculum Standards. **This survey should take approximately 10 minutes to complete.** This survey is being conducted to review the importance of the current Georgia Elementary Agriculture Pilot Program Curriculum Standards and to determine community stakeholder engagement, as well as, middle and high school agriculture program involvement. We hope you will take a moment to complete the survey. Your participation is voluntary and you may stop participating at any time. Your personal identifiable information will not be collected and all responses are anonymous. Please do not hesitate to contact Tracy Champagne or Ph.D. Chair, Dr. Lindner if you have any questions about this research project. For further information, click the "Georgia Elementary Agriculture Education Pilot Program Curriculum Standards Review" link below.

Informed consent

This survey should take approximately 10 minutes to complete.

Thank you!

Tracy Champagne, Ph.D. Candidate, Agriscience Education, Auburn University
772-215-0867
tzc0052@auburn.edu

James Lindner, Ph. D., Professor, Agriscience Education, Agriscience Education, Auburn University
334-844-6797
jrl0037@auburn.edu

- ○ YES, I agree to participate in this study. (1)
- ○ No, I do not wish to participate in this study. (2)

Skip To: End of Survey If Q1 = No, I do not wish to participate in this study.

End of Block: Introduction

Start of Block: Universal Standards Question (All Grades) - Employability Skills

Q57 For each of the Georgia State Standards below, please indicate your belief if the standard is relevant to the grade level and continue to be used in Georgia's curriculum.

Q18 Employability Skills - Universal Standard for All Grade Levels & Courses

	Strongly agree (1)	Somewhat agree (2)	Neither agree nor disagree (3)	Somewhat disagree (4)	Strongly disagree (5)
Communicate effectively through writing, speaking, listening, reading, and interpersonal abilities (1)	○	○	○	○	○
Demonstrate career awareness through the appropriate use of various technologies (2)	○	○	○	○	○
Model work readiness traits required for success in the workplace (3)	○	○	○	○	○
Apply the appropriate skill sets to be productive in the workplace, work independently and apply team work skills (4)	○	○	○	○	○

End of Block: Universal Standards Question (All Grades) - Employability Skills

Start of Block: Kindergarden

KT Do you teach Kindergarten ?

- ○ Yes (1)
- ○ No (2)

Skip To: End of Block If KT = No

Q56 For each of the Georgia State Standards below, please indicate your belief if the standard is relevant to the grade level and continue to be used in Georgia's curriculum.

KAS Agricultural Systems: Investigate and develop an understanding of agricultural systems such as Agricultural Mechanics; Plant Systems; Animal Systems; and/or Food Systems.

	Strongly agree (1)	Somewhat agree (2)	Neither agree nor disagree (3)	Somewhat disagree (4)	Strongly disagree (5)
KAS1: Connect and categorize the products (such as milk, eggs, bread and blue jeans) used daily from agriculture. (1)	○	○	○	○	○
KAS2. Investigate agricultural safety. For example, companion & farm animal safety, electrical safety, equipment safety (such as hand tools, farm tools, lawnmowers, tractors, chain saws, etc.) (2)	○	○	○	○	○
KAS3. Distinguish between edible and non-edible plants that are produced in agriculture. (3)	○	○	○	○	○
KAS4. Discuss the basic needs of plants (4)	○	○	○	○	○

Q34 **Foundations of Agriculture:** Explore and communicate the importance of agriculture and its impact on daily life.

	Strongly agree (1)	Somewhat agree (2)	Neither agree nor disagree (3)	Somewhat disagree (4)	Strongly disagree (5)
KFA1. Discuss examples of agricultural products and how they are used (food crops (plant and animal), timber for building, landscape, etc.). (1)	○	○	○	○	○
KFA2a. Define the characteristics of a farm: differentiate between living and non-living aspects of a farm. (2)	○	○	○	○	○
KFA2b. Define the characteristics of a farm: investigate the role of different types of farmers. (3)	○	○	○	○	○

Q35 **Leadership and Career Readiness:** Develop an understanding of leadership skills and characteristics for career readiness while exploring youth leadership opportunities and careers in agriculture as indicated by the National FFA Organization.

	Strongly agree (1)	Somewhat agree (2)	Neither agree nor disagree (3)	Somewhat disagree (4)	Strongly disagree (5)
KLCR1. Describe the characteristics of agricultural jobs. (1)	○	○	○	○	○
KLCR2. Begin to recognize and demonstrate the use of interpersonal qualities, also known people skills. (2)	○	○	○	○	○

Q36 **Natural Resource Systems:**Develop and build an understanding of the area of forestry, environmental and natural resource systems.

	Strongly agree (1)	Somewhat agree (2)	Neither agree nor disagree (3)	Somewhat disagree (4)	Strongly disagree (5)
KNRS1. Investigate the components of a forest and your environment. (1)	○	○	○	○	○
KNRS2. Differentiate among the different uses of land (crop production, pasture, forestry, etc.) (2)	○	○	○	○	○
KNRS3. Differentiate among the use of livestock, companion animals, and wildlife. (3)	○	○	○	○	○
KNRS4. Investigate the need to reduce, reuse, and recycle. (4)	○	○	○	○	○

End of Block: Kindergarden

Start of Block: 1st Grade

Q3 Do you teach 1st Grade?

- Yes (1)
- No (2)

Skip To: End of Block If Q3 = No

Q58 For each of the Georgia State Standards below, please indicate your belief if the standard is relevant to the grade level and continue to be used in Georgia's curriculum.

1AS **Agricultural Systems:** Investigate and develop an understanding of agricultural systems such as Agricultural Mechanics; Plant Systems; Animal Systems; and/or Food Systems.

	Strongly agree (1)	Somewhat agree (2)	Neither agree nor disagree (3)	Somewhat disagree (4)	Strongly disagree (5)
1AS1. Diagram and compare the structures of plants. (1)	○	○	○	○	○
1AS2. Produce a plant from a seed and/or a cutting. (2)	○	○	○	○	○
1AS3. Discuss parts of a plant (roots, leaf, stem, and flower). (3)	○	○	○	○	○
1AS4. Measure using various tools (rulers, yardsticks, measuring tapes, measuring cups and spoons, etc.). (4)	○	○	○	○	○

1FA **Foundations of Agriculture:** Explore and communicate the importance of agriculture and its impact on daily life.

	Strongly agree (1)	Somewhat agree (2)	Neither agree nor disagree (3)	Somewhat disagree (4)	Strongly disagree (5)
1FA1. Discuss and cite examples of the way agricultural products address human needs for food, clothing/fiber, and shelter. (1)	○	○	○	○	○
1FA2. Identify agriculture commodities, business, and industries in your area. (2)	○	○	○	○	○
1FA3. Explore food preparation and preservation techniques. (3)	○	○	○	○	○

1LCR **Leadership and Career Readiness:** Develop an understanding of leadership skills and characteristics for career readiness while exploring youth leadership opportunities and careers in agriculture as indicated by the National FFA Organization.

	Strongly agree (1)	Somewhat agree (2)	Neither agree nor disagree (3)	Somewhat disagree (4)	Strongly disagree (5)
1LCR1a. Demonstrate and develop soft skills: Define and demonstrate a strong work ethic and positive attitude. (1)	○	○	○	○	○
1LCR1b. Demonstrate and develop soft skills: Define and demonstrate a spirit of community service and being respectful. (2)	○	○	○	○	○
1LCR2. Explore careers related to the plant industry such as a horticulturist, landscaper, greenhouse operator, florist, or plant breeder. (3)	○	○	○	○	○
1LCR3. Identify a local agricultural leader and describe their impact on your community. (4)	○	○	○	○	○

1NRS **Natural Resource Systems :** Develop and build an understanding of the area of forestry, environmental and natural resource systems.

	Strongly agree (1)	Somewhat agree (2)	Neither agree nor disagree (3)	Somewhat disagree (4)	Strongly disagree (5)
1NRS1. Cite examples of products obtained from our forests and farms. (1)	○	○	○	○	○
1NRS2. Discuss & compare a variety of trees found in your area. (a) Identify, map and label deciduous and evergreen trees nearby. (2)	○	○	○	○	○
1NRS3. Investigate the features of soil. (a) Compare and contrast various soil samples found in your area. (3)	○	○	○	○	○

End of Block: 1st Grade

Start of Block: 2nd Grade

Q4 Do you teach 2nd grade?

- Yes (1)
- No (2)

Skip To: End of Block If Q4 = No

Q59 For each of the Georgia State Standards below, please indicate your belief if the standard is relevant to the grade level and continue to be used in Georgia's curriculum.

2AS **Agricultural Systems:** Investigate and develop an understanding of agricultural systems such as Agricultural Mechanics; Plant Systems; Animal Systems; and/or Food Systems.

	Strongly agree (1)	Somewhat agree (2)	Neither agree nor disagree (3)	Somewhat disagree (4)	Strongly disagree (5)
2AS1. Analyze the importance of animals in agriculture and examine the role they play in the lives of consumers. (1)	○	○	○	○	○
2AS2. Investigate the life cycle of different animals. (2)	○	○	○	○	○
2AS3. Demonstrate an understanding of food safety when handling animal products or byproducts. (3)	○	○	○	○	○
2AS4. Collect, display and explain the parts of a production animal and the importance of each part. (4)	○	○	○	○	○
2AS5. Collect, display and explain the parts of a plant and the importance of each part (roots, leaf, stem, flower, seed, and fruit). (5)	○	○	○	○	○

2FA **Foundations of Agriculture:** Explore and communicate the importance of agriculture and its impact on daily life.

	Strongly agree (1)	Somewhat agree (2)	Neither agree nor disagree (3)	Somewhat disagree (4)	Strongly disagree (5)
2FA1. Analyze household and daily used items to determine how they were made (Georgia Commodities). (a) Investigate the origin of certain by-products. (1)	○	○	○	○	○
2FA2. Identify the nutritional value of agricultural products in a healthy diet. (2)	○	○	○	○	○
2FA3. Identify historical figures in agriculture history and describe their contributions (such as, George Washington Carver, Jimmy Carter, James E. Oglethorpe, Eli Whitney). (3)	○	○	○	○	○
2FA4. Cite evidence that agricultural partnerships influence agriculture guidelines including conservation, food safety, and best practices. (4)	○	○	○	○	○

2LCR **Leadership and Career Readiness:** Develop an understanding of leadership skills and characteristics for career readiness while exploring youth leadership opportunities and careers in agriculture as indicated by the National FFA Organization.

	Strongly agree (1)	Somewhat agree (2)	Neither agree nor disagree (3)	Somewhat disagree (4)	Strongly disagree (5)
2LCR1. Identify and apply concepts related to leadership, personal, and career skill development. (1)	○	○	○	○	○
2LCR2. Memorize and recite the National FFA Motto: Learning to Do, Doing to Learn, Earning to Live, Living to Serve. (2)	○	○	○	○	○
2LCR3. Explore and investigate local / state agriculture careers and their impact on your community related to food and nutrition such as food safety specialists, extension agents, ag teachers, school nutritionists, meat inspectors, and agricultural researchers. (3)	○	○	○	○	○

2NRS **Natural Resource Systems:** Develop and build an understanding of the area of forestry, environmental and natural resource systems.

	Strongly agree (1)	Somewhat agree (2)	Neither agree nor disagree (3)	Somewhat disagree (4)	Strongly disagree (5)
2NRS1. Identify and distinguish natural resources found within their region. (1)	○	○	○	○	○
2NRS2. Define and identify best practices in agriculture in the school's region. (2)	○	○	○	○	○
2NRS3. Assess the components of various habitats found within their region. (3)	○	○	○	○	○

End of Block: 2nd Grade

Start of Block: 3rd Grade

Q5 Do you teach 3rd Grade?

- ○ Yes (1)
- ○ No (2)

Skip To: End of Block If Q5 = No

Q60 For each of the Georgia State Standards below, please indicate your belief if the standard is relevant to the grade level and continue to be used in Georgia's curriculum.

3AS **Agricultural Systems:** Investigate and develop an understanding of agricultural systems such as Agricultural Mechanics; Plant Systems; Animal Systems; and/or Food Systems.

	Strongly agree (1)	Somewhat agree (2)	Neither agree nor disagree (3)	Somewhat disagree (4)	Strongly disagree (5)
3AS1. Relate the importance of how food is produced, handled, prepared and stored in order to protect the safety and nutritional value of the food. (1)	○	○	○	○	○
3AS2. Define, investigate and compare common food product labels such as: organic, GMOs, etc. (2)	○	○	○	○	○
3AS3. Research the role of pollinators (bees, birds, butterflies, etc.) (3)	○	○	○	○	○
3AS4. Describe the role of government and industry research in ensuring a safe and wholesome food supply and environmental stewardship (such as USDA, GA Department of Agriculture, CDC, UGA Cooperative Extension/Experiment Station). (4)	○	○	○	○	○

3LCR **Leadership and Career Readiness:** Develop an understanding of leadership skills and characteristics for career readiness while exploring youth leadership opportunities and careers in agriculture as indicated by the National FFA Organization.

	Strongly agree (1)	Somewhat agree (2)	Neither agree nor disagree (3)	Somewhat disagree (4)	Strongly disagree (5)
3LCR1. Develop and practice soft skills such as public speaking, eye contact, and good citizenship. (1)	○	○	○	○	○
3LCR2. Investigate Government and Agricultural Industry Leaders. (2)	○	○	○	○	○
3LCR3. Explore careers related to the Forestry & Natural Resources industry such as conservationist, environmentalist, game warden, wildlife management, hunting/fishing guides, forestry/natural resource professors, forestry/natural resources researchers, arborists. (3)	○	○	○	○	○
3LCR3. Evaluate and provide rationale for an opinion writing on an agricultural related topic. (4)	○	○	○	○	○

3NRS **Natural Resource Systems:** Develop and build an understanding of the area of forestry, environmental and natural resource systems.

	Strongly agree (1)	Somewhat agree (2)	Neither agree nor disagree (3)	Somewhat disagree (4)	Strongly disagree (5)
3NRS1. Examine positive and negative impact of agriculture production on the environment in your region (water, air, soil, plants, insects). (1)	○	○	○	○	○
3NRS2. Compare the different types of soil found in Georgia. (2)	○	○	○	○	○
3NRS3. Analyze Georgia's renewable and nonrenewable natural resources. (3)	○	○	○	○	○
3NRS4. Identify and categorize wildlife found in Georgia. (4)	○	○	○	○	○

3FA **Foundations of Agriculture:** Explore and communicate the importance of agriculture and its impact on daily life.

	Strongly agree (1)	Somewhat agree (2)	Neither agree nor disagree (3)	Somewhat disagree (4)	Strongly disagree (5)
3FA1. Describe how agriculture impacts your daily life. (1)	○	○	○	○	○
3FA2. Use a map to locate the geographic regions of Georgia; locate and compare the geographic regions such as crops/fruit production, livestock/poultry, native trees and plants, wildlife, fall line, and forestry. (2)	○	○	○	○	○
3FA3. Identify commodities based on the different geographic regions of Georgia and determine how environmental factors affect agriculture production in each region. (3)	○	○	○	○	○
3FA4. Connect the need for Georgia grown commodities to be exported to other regions and the need for imports of products from other places. (Make a historical connection to explorers and how people have been trading commodities since the beginning of time). (4)	○	○	○	○	○
3FA5. Categorize the entities that influence Georgia Agriculture (local, state, and national government entities as well as private citizens). (5)	○	○	○	○	○

End of Block: 3rd Grade

Start of Block: 4th Grade

Q6 Do you teach 4th Grade?

- Yes (1)
- No (2)

Skip To: End of Block If Q6 = No

Q61 For each of the Georgia State Standards below, please indicate your belief if the standard is relevant to the grade level and continue to be used in Georgia's curriculum.

4AS **Agricultural Systems:** Investigate and develop an understanding of agricultural systems such as Agricultural Mechanics; Plant Systems; Animal Systems; and/or Food Systems.

	Strongly agree (1)	Somewhat agree (2)	Neither agree nor disagree (3)	Somewhat disagree (4)	Strongly disagree (5)
4AS1. Identify basic building tools (e.g., hammer, screwdriver, nail, screw, etc.) and determine proper uses, including safety procedures. (1)	○	○	○	○	○
4AS2. Identify and assess which simple machine will complete a task (i.e., lever, pulley, wedge, inclined plane, wheel and axle, and screw). (2)	○	○	○	○	○
4AS3. Design and create an example of a simple machine that can be used to complete an agricultural task. (3)	○	○	○	○	○

4FA **Foundations of Agriculture:** Explore and communicate the importance of agriculture and its impact on daily life.

	Strongly agree (1)	Somewhat agree (2)	Neither agree nor disagree (3)	Somewhat disagree (4)	Strongly disagree (5)
4FA1. Compare and contrast the past and present importance of agriculture products and by-products in your community and around the world. (1)	○	○	○	○	○
4FA2. Connect the relationship between weather, the environment, and agriculture. (a) Identify the impact weather has on agriculture and how it affects the quality of a crop. (2)	○	○	○	○	○
4FA3. Infer/Interpret the impact of laws, guidelines, and regulations provided by the government and community partnerships on the agriculture industry. (3)	○	○	○	○	○

4LCR **Leadership and Career Readiness:** Develop an understanding of leadership skills and characteristics for career readiness while exploring youth leadership opportunities and careers in agriculture as indicated by the National FFA Organization.

	Strongly agree (1)	Somewhat agree (2)	Neither agree nor disagree (3)	Somewhat disagree (4)	Strongly disagree (5)
4LCR1. Develop and apply verbal and nonverbal communication skills such as public speaking/ presentations. (1)	○	○	○	○	○
4LCR2. Develop an organized argument based on evidence supporting or opposing an agricultural issue. (2)	○	○	○	○	○
4LCR3. Explore various school and community organizations available for 4th graders to join in local area to develop leadership skills. (3)	○	○	○	○	○
4LCR4. Explore careers related to the Agriculture Mechanics and Technology industry, such as equipment operators, welders, computer/website programmers, meat processing employees who work on equipment to process animals, tractor service techs, fence builders, ag engineers or ag mechanics teachers. (4)	○	○	○	○	○

4NRS **Natural Resource Systems:** Develop and build an understanding of the area of forestry, environmental and natural resource systems.

	Strongly agree (1)	Somewhat agree (2)	Neither agree nor disagree (3)	Somewhat disagree (4)	Strongly disagree (5)
4NRS1. Identify, investigate, and compare multiple native plant species in Georgia. (a) Categorize native vs. invasive plant species in Georgia. (1)	○	○	○	○	○
4NRS2. Identify, investigate, and compare multiple native animal species in Georgia as herbivore, carnivore, omnivore, and scavenger. (a) Categorize native vs. invasive animal species in Georgia. (2)	○	○	○	○	○
4NRS3. Define a local watershed and how human actions impact water quality. (3)	○	○	○	○	○

End of Block: 4th Grade

Start of Block: 5th Grade

Q7 Do you teach 5th Grade?

- Yes (1)
- No (2)

Skip To: End of Block If Q7 = No

Q62 For each of the Georgia State Standards below, please indicate your belief if the standard is relevant to the grade level and continue to be used in Georgia's curriculum.

5AS **Agricultural Systems:** Investigate and develop an understanding of agricultural systems such as Agricultural Mechanics; Plant Systems; Animal Systems; and/or Food Systems.

	Strongly agree (1)	Somewhat agree (2)	Neither agree nor disagree (3)	Somewhat disagree (4)	Strongly disagree (5)
5AS1. Classify and differentiate between different breeds of livestock. (1)	○	○	○	○	○
5AS2. Compare and contrast instinct and learned animal behaviors. (2)	○	○	○	○	○
5AS3. Compare and contrast inherited and acquired physical traits in companion animals and livestock. (3)	○	○	○	○	○
5AS4. Examine the role of organisms in agriculture to soil and animals. (4)	○	○	○	○	○
5AS5. Connect the role of pollinators in agriculture. (5)	○	○	○	○	○
5AS6. Classify different types of trees in your area. (6)	○	○	○	○	○
5AS7. Differentiate and understand parts of plants and how they are utilized in agriculture. (7)	○	○	○	○	○
5AS8. Investigate how agricultural biotechnology is used in Georgia agriculture. (8)	○	○	○	○	○

5FA **Foundations of Agriculture:** Explore and communicate the importance of agriculture and its impact on daily life.

	Strongly agree (1)	Somewhat agree (2)	Neither agree nor disagree (3)	Somewhat disagree (4)	Strongly disagree (5)
5FA1. Construct a model of the supply chain from origination to end product of commodities/ fiber/ natural resources. (1)	○	○	○	○	○
5FA2. Explore and cite examples of agricultural history, economics, and inventions. (2)	○	○	○	○	○
5FA3. Assess the role of research in the agriculture industry. (3)	○	○	○	○	○

5LCR **Leadership and Career Readiness:** Develop an understanding of leadership skills and characteristics for career readiness while exploring youth leadership opportunities and careers in agriculture as indicated by the National FFA Organization.

	Strongly agree (1)	Somewhat agree (2)	Neither agree nor disagree (3)	Somewhat disagree (4)	Strongly disagree (5)
5LCR1. Identify and apply concepts related to the National FFA mission (premier leadership, personal growth, and career success). (1)	○	○	○	○	○
5LCR2. Explore careers related to the animal science industry such as livestock producers, veterinarians, small animal trainers, animal science researchers, meat inspectors, livestock buyers, livestock marketing, and animal pharmaceuticals representatives. (2)	○	○	○	○	○
5LCR3. Understand the leadership opportunities and officer roles in youth organizations at the local, area & state levels. (3)	○	○	○	○	○
5LCR4. Compare the various school and community organizations that encourage leadership and personal growth. (4)	○	○	○	○	○

5NRS **Natural Resource Systems:** Develop and build an understanding of the area of forestry, environmental and natural resource systems.

	Strongly agree (1)	Somewhat agree (2)	Neither agree nor disagree (3)	Somewhat disagree (4)	Strongly disagree (5)
5NRS1. Research the impact of agricultural practices on forests, soils and other natural resources. (1)	○	○	○	○	○
5NRS2. Describe the benefits and the importance of conservation and recycling of natural resources. (2)	○	○	○	○	○

End of Block: 5th Grade

Start of Block: Demographics

D1 **This section collects personal characteristics about respondents**

D4 **Which option below best describes your teacher preparation?**

▼ Please select an option (1) ... No prior teaching experience and do not have a degree in an agriculturally related field (9)

D5 **What is the highest degree you have completed?**

▼ Please select an option (1) ... Doctorate Degree (5)

D6 **Do you have your elementary agricultural education certification?**

○ Yes, I already have the elementary agricultural education endorsement on my certificate. (1)

○ No, I do not have the elementary agricultural education endorsement on my certificate. (2)

Skip To: D7 If D6 = No, I do not have the elementary agricultural education endorsement on my certificate.

D7 **Please indicate your plan for your elementary agricultural education certification:**

○ I plan to attend classes and add the elementary agricultural education endorsement to my certificate. (1)

○ I have no interest in adding the elementary agricultural education endorsement to my certificate. (2)

Q69 **Including this year, how long have you been teaching?**

- ○ 1-5 years (1)
- ○ 6-10 years (2)
- ○ 11-15 years (3)
- ○ 16-20 years (4)
- ○ 21-25 years (5)
- ○ 26+ years (6)

D8 **Including this year, how long have you been teaching agricultural education?**

- ○ 1-5 years (1)
- ○ 6-10 years (2)
- ○ 11-15 years (3)
- ○ 16-20 years (4)
- ○ 21-25 years (5)
- ○ 26+ years (6)

D9 **Which student age group best represents your current teaching assignment?**

- ☐ Elementary School (1)
- ☐ Middle School (2)
- ☐ High School (3)

Q56 **What is the student population at your current teaching assignment?**

- ○ 0-250 (1)
- ○ 251-500 (2)
- ○ 501-750 (3)
- ○ 751-1,000 (4)
- ○ 1,000+ (5)

Page Break

D10 **What school based agricultural education programs are offered in your school system?**

- ☐ Elementary School (1)
- ☐ Middle School (2)
- ☐ High School (3)
- ☐ Young Farmer (4)
- ☐ 4-H (5)

D11 **In your school system, how many agriculture teachers comprise your complete agricultural education program (from elementary to high school)?**

- 1 (1)
- 2 (2)
- 3 (3)
- 4+ (4)
- unknown (5)

Q54 **In which Georgia Ag Ed Region do you currently teach?**

- North (1)
- Central (2)
- South (3)

Q55 **The community where I teach would be classified as a _____.**

- rural area (1)
- town (2)
- suburb (3)
- city/urban area (4)

Q61 How many people live in the community you teach in?

- ○ <2500 people (1)
- ○ 2,500 - 5,000 people (2)
- ○ 5,001 - 10,000 people (3)
- ○ 10,001 - 20,000 people (4)
- ○ 20,001 - 30,000 people (5)
- ○ 30,001 - 40,000 people (6)
- ○ 40,001 - 50,000 people (7)
- ○ >50,000 people (8)

Q65 **How often do you use the Georgia elementary agriculture Google Drive resource folder?**

- ○ daily (1)
- ○ weekly (2)
- ○ monthly (3)
- ○ as needed (4)
- ○ occasionally (5)
- ○ never (6)

Q60 **How often do you integrate "Ag in the Classroom" content in your lessons?**

- daily (1)
- weekly (2)
- monthly (3)
- as needed (4)
- occasionally (5)
- never (6)

Page Break

D12 **How often to you collaborate with your local Georgia Farm Bureau Office?**

- daily (1)
- weekly (2)
- monthly (3)
- as needed (4)
- occasionally (5)
- never (6)

Q63 **How often do you collaborate with the Georgia 4-H program?**

- daily (1)
- weekly (2)
- monthly (3)
- as needed (4)
- occasionally (5)
- never (6)

Q64 **How often do you collaborate with the Georgia Extension program?**

- daily (1)
- weekly (2)
- monthly (3)
- as needed (4)
- occasionally (5)
- never (6)

D2 **What is your gender?**

▼ Please select an option (1) ... Prefer not to say (6)

D3 **Please specify your race.**

▼ Please select an option (1) ... Other (7)

Q70 **In what year were you born?**

_____

End of Block: Demographics

Appendix E: Georgia Elementary Agriculture Education Pilot Program Schools

Georgia Agricultural Education

ELEMENTARY AGRICULTURAL EDUCATION PILOT SCHOOLS

School System	School Name
Appling County	Appling County Elementary
Banks County	Banks County Elementary
Berrien County	Berrien County High
Bibb County	Heard Elementary
Brooks County	Quitman Elementary
Colquitt County	Hamilton Elementary
Colquitt County	J. M. Odom Elementary
Colquitt County	Norman Park Elementary
Crawford County	Crawford County Elementary
Decatur County	Jones Wheat Elementary
Fulton County	Cogburn Woods Elementary
Grady County	Whigham Elementary
Irwin County	Irwin County Elementary
Lowndes County	Westside Elementary
Montgomery County	Montgomery County Elementary
Morgan County Charter School System	Morgan County Elementary
Pickens County	Hill City Elementary
Pike County	Pike County Elementary
Putnam County Charter School System	Putnam County Primary

Appendix F: Georgia Elementary Agriculture Education 3-Ring Model