

**Learning Preferences of Georgia Young Farmer Participants**

by

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## Abstract

The purposes of this quantitative descriptive and correlational study were to describe the learning preferences of Georgia Young Farmer participants and determine if significant differences exist between scores relating to visual, auditory and kinesthetic learning styles.

A pilot study was used to correct identifiable problems with the survey instrument and to determine an estimate for external validity as to how well the study predicts agricultural learners preferences. The responding population (N=340) included participants (291 males and 49 females) from 17 Young Farmer groups that returned questionnaires (31% of programs).

The instrument was designed to yield subscale scores that indicate preferences for visual, auditory, and kinesthetic learning styles using agricultural learning situations as examples.

Descriptive statistics helped to explain the types of learning experiences that the participants preferred. In comparing the three subgroups, the highest mean on a four point scale was for kinesthetic (3.13), followed by auditory (2.82) and finally visual (2.70).

The repeated measure within subjects analysis yielded an F test indicating a significant difference within the three learning preference means of participants ( $F=202.736$ ,  $p < .001$ ).

A multivariate between-subjects MANOVA was then used for research questions 2-4. The analysis applied to gender, age levels and employment showed no significant differences.

During analysis, the question mean totals suggested that participants were choosing responses related to the educational setting as well as learning styles. This led to further analysis of this data and findings are reported in Chapter 4.

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## Chapter 1

### Introduction

In 1917 Congress entered into a relationship with the states by providing federal aid to secondary education for the first time. The Smith-Hughes Act or the Vocational Act of 1917 included federal involvement in vocational education of which agricultural education was an integral part. It included language that launched a link to adult farmer education. The act allowed for adult education program funding for training those working or preparing for work on the farm beyond the age of fourteen. (Smith-Hughes Act of 1917).

Adult agricultural education that exists today is typically organized by an agriculture teacher who teaches high school agriculture. Nineteen states have organized young farmer associations. These state associations are also a part of the National Young Farmer Education Association (NYFEA, 2012). These associations provide leadership to adult education in agriculture. However, not all teachers who maintain adult agriculture programs or provide individual adult agricultural instruction are members of a state or national organization. This study examined preferred learning styles of Georgia Young Farmer Association participants. According to the Georgia Young Farmer Association website, for 31 consecutive years, the GYFA (Georgia Young Farmer Association) has claimed the largest young farmer membership in the nation. (Georgia Young Farmer Association, 2013).

Agricultural education is unique in its attention to adult learning. Adult farmer training in agricultural education is not attempted by every agricultural program but when it is attempted, it is typically performed or organized by a regular classroom Agriscience teacher. The Agriculture

Teachers Handbook of the National FFA Organization (2010) gives a recommendation for a classroom teacher to affiliate the local program with the NYFEA, but there are no requirements cited. In essence, organized adult classes in agricultural education in many states are somewhat voluntary by the teacher. According to Birkenholz and Maricle (1991), "Clearly, there is significant variability among the states with regard to the level, source, and recipients of funding support for adult education in agriculture. There was widespread agreement that every agricultural education program should have an adult component" (p.24).

Since the young farmer teacher or regular secondary agricultural teacher that teaches adults is expected to present and/or organize educational classes and activities for farmers, it is important to determine the best teaching methods for presenting these programs to adults.

In 1996, Carpentier and Iverson saw a need to acquire information for program planning. "Furthermore, since the typical member is known to have certain characteristics, the NYFEA should examine the curricular needs for both family and agricultural education delivery systems and farm business development. Finally, these data should be used to evaluate current programs and to aid in planning new programs for the NYFEA, in order to better serve the membership" (p.46).

Program planning that will effectively educate the adult farmer participant is the goal of this study. In another study it was determined:

that learning methods and practices that more actively involved learners in acquiring, using, and evaluating new knowledge and practice had the most positive consequences.

Results also showed that the adult learning methods were most effective when used with

a small number of learners where the learning experience occurred for 10 or more hours (Trivette, Dunst, Hamby, & O'Herin, 2009, p.9).

Agricultural educators should look at ways that best educate their constituents. Programs may be presented in a way that is convenient or comfortable for the teacher. Stitt-Gohdes (2001) related that "research supports the concept that most teachers teach the way they learn" (p.136). Since there is a tremendous amount of time and energy spent to attract farmers to training and educational experiences, there is a need to discover what method is best for presenting information.

Much has been written about theories of the way adults learn. Malcolm Knowles resurrected an old German educational term called andragogy, to convey how an adult learns. (Knowles, 1980).

Andragogy is based upon six essential hypotheses concerning the attributes of adult learners (Knowles, Swanson, & Holton, 2005). Knowles reported that educators' understanding of the six hypotheses in andragogy will assist them in organizing and creating successful instruction for adult learners. Adults are likely to be self-directing and like all learners have individual learning style preferences that include auditory, visual and experiential. (Kolb and Fry, 1975).

How farmers learn, but more importantly how they would prefer to learn is at the heart of this study. The literature demonstrates that many studies have postulated that adults learn differently than youth. If we assume that adult farmers would have the same basic goals as other adults, this could have implications for Young Farmer Teachers and their approach to planning educational experiences.

## Statement of the Problem

Since in most states an agricultural educator's education is primarily in teaching students in middle school and high school (Agriculture Teacher's Handbook - National FFA Organization, 2010), there is a need for these educators to be trained in andragogy so as to teach adults in the best possible manner. Typically, agriculture educators in secondary education are employed to teach teenagers.

In Georgia, there is no required assessment of Georgia Young Farmers based on preferred learning. However, State Department of Education policy is for Young Farmers to be surveyed to determine topics that will be of help or interest to them (Georgia Ag Ed, 2013). The required survey might give an indication of preferred learning by the topics chosen.

Agriculture teachers, therefore, need help in decision making about how to present educational programs to adults. "It is commonly accepted that adult students require different educational techniques than for teaching youth. If state supervisors and local administrators expect agricultural education programs to include an adult education component, pre-service teachers must be adequately prepared in the principles of andragogy" (Boone, Gartin, Wright, Lawrence, & Odell, 2002, p. 46).

Knowing and understanding learning styles can help an individual learn more efficiently (Silver, Strong & Perini, 1997). Stimulating learning in a setting preferred by adult farmers should be studied.

## Purpose of the Study

The purposes of this quantitative descriptive, assessment of group differences, and correlational study were to acquire information to describe the preferred learning styles of Georgia Young Farmer Educational Association participants and determine if statistically significant differences occur in preferred learning styles subgroups of visual, auditory and kinesthetic. In addition, to determine if significant differences in learning preferences exist between gender, age ranges, and employment.

## Research Questions

The study was an attempt to answer the following research questions:

1. Do Georgia Young Farmer adult participant's preferred learning methods for visual, auditory and kinesthetic differ?
2. Do Georgia Young Farmer adult participant's preferred learning methods for visual, auditory and kinesthetic differ by gender?
3. Do Georgia Young Farmer adult participant's preferred learning methods for visual, auditory and kinesthetic differ by age level?
4. Do Georgia Young Farmer adult participant's preferred learning methods for visual, auditory and kinesthetic differ by occupation?

## Assumptions

The following assumptions relate to this study:

1. The survey questionnaire instrument was considered to yield valid scores for measuring Georgia Young Farmer learning preferences.
2. Georgia Young Farmer agricultural education teachers accurately recorded and returned research data to the researcher.
3. Teachers did not discuss the survey while it was in progress.
4. Each participant answered the questions to the best of their ability on each measure.
5. Scores on the dependent variable, preferred learning styles, are normally distributed in the population for each subgroup.
6. The population variances of the depression difference scores computed between any two levels is the same regardless of which two levels are chosen.
7. Subgroups are independent and represent a random sample.

## Delimitations of the Study

The delimitations of the study included survey questionnaire scores from participants in 17 Georgia Young Farmer programs that returned data.

## Limitations of the Study

The following were limitations of the study:

1. There may be significant variability between participants background.
2. Participants may not be willing to participate in a survey.

3. The study is may not be representative of all farmers.
4. There may be significant variability between participants background in agriculture.
5. The study is limited to participants who attend an educational program.

### Operational Definitions

Agricultural Education – One of the Career and Technical Education programs available for public school students in 6<sup>th</sup> through 12<sup>th</sup> grades. The program contains three equal segments: classroom/laboratory instruction, FFA, and SAE. Agricultural Education is referred to as Agriscience Education or Vocational Agriculture (Phipps, Osborn, Dyer, & Ball, 2008).

Agricultural Education Program Participant – A high school student who has passed one or more secondary Agricultural Education courses (Georgia Department of Education, 2010a).

Agricultural Professional-Person making a majority of their income from an occupation related to agriculture other than farming.

Full-Time Farmer-Person who makes a majority of their income from crops or farm animals.

Georgia Young Farmers Association – An agriculture education leadership organization conducted with adult farmer education as a part of the Georgia State Department of Education.

Part Time Farmer-Person making a portion of their income from farming, while working another job.

VARK- The acronym VARK stands for Visual, Aural, Read/write, and Kinesthetic sensory modalities that are used for learning information. Fleming and Mills (1992) suggested four modalities that seemed to reflect the experiences of the students and teachers.

## Chapter 2

### Review of the Literature

#### Preferred Learning Preferences of Georgia Young Farmer Participants

##### Adult Agriculture Historically as a Part of Secondary Education

Agricultural education has a long history of including an element of adult education into its program. Senator Hoke Smith and Representative Dudley Hughes both represented Georgia in the U.S. Congress and sponsored The National Vocational Act of 1917. The legislation is also known as the Smith-Hughes Act. President Woodrow Wilson signed the act into law on Feb. 23, 1917 (National FFA Organization, 2010).

The 1917 the Smith-Hughes National Vocational Education Act included the provision to train people entering or planning to enter farm employment. While the Act did not specifically call for life-long learning it certainly opened the gate to current adult agricultural programs (Smith-Hughes Act of 1917).

Senators Smith and Representative Hughes' vision led to federal legislation and thus created a program for students in public secondary schools. The Smith Hughes Act was the beginning of high school vocational programs and was specific in that it permitted instruction for students "below the baccalaureate level" (Frasier, 2009, p.29). The provisions of this act targeted students over the age of 14 and adult education in agriculture, along with the high school instructional program, began taking form as a part of the secondary program (Smith-Hughes Act of 1917).

Although agricultural education beginnings included an adult component, it is still mainly a program for the secondary student. Croom included research related to Cook's Handbook on Teaching Vocational Agriculture (Cook, 1938, 1947 and 1952). This text and subsequent editions were used in training agriculture teachers for over 50 years because "under the new authorship of Lloyd Phipps, the handbook continued to be published as late as 1988" (p.116). According to Croom, Phipps textbook made reference to the Young Farmers in the 1966 and 1972 editions, but by the 1988 edition "references to the Young Farmers had disappeared, and the four instructional components became classroom instruction, supervised experience, laboratory instruction, and vocational student organization" (p.114).

Adult farmer training in agricultural education is not attempted by every agricultural program but when it is, it is typically performed or organized by a regular classroom Agriscience teacher. In essence, organized adult classes in agricultural education are somewhat voluntary by the teacher. Birkenholz and Maricle related that the level of involvement by teachers of agriculture in adult education varies among the states, even though it was clearly agreed upon by participants in their study that programs should have an adult component. Further, out of 5852 secondary agricultural programs, only 1610 had an adult component (Birkenholz and Maricle, 1991).

Young Farmer teachers in Georgia are expected by contract to be released by local systems from teaching secondary agriculture classes by 10:00 a.m. each morning to design adult educational experiences, work with farmers individually and in groups (Georgia Ag Ed 2013). According to the Georgia Young Farmers website, "The Young Farmer Program began in 1951 and functioned as an instructional program coordinated by full time young farmer teachers. In

1971, the Georgia Young Farmers Association (GYFA) was organized as an extension of the instructional program. The purpose of the state association is for the coordination of state level activities and to provide leadership activities for members” (Georgia Young Farmers, 2012). The Georgia Young Farmer Association is also a member of a national organization of state associations called the National Young Farmer Educational Association (NYFEA, 2012).

There are regular agricultural education teachers in Georgia that receive a monetary supplement from the state to conduct an adult program in addition to their regular duties in a program called short term adult (Georgia Ag Ed, 2012).

#### Program Planning in Adult Agriculture Education

According to Kathy Cooper of the Georgia Young Farmers Association, “the Georgia Young Farmers has a goal of 10,000 members. In 2012 the Georgia Young Farmer Membership reached 4576; an increase of 12.2% from 2011. In the last 4 years there has been an increase in membership of 19.1% 2009-2011 it was 3700, 3657 4017 (K. Cooper, personal communication, May 24, 2013). For sustained growth, a vision for program planning will be necessary.

The literature suggests a need for program planning. Carpentier and Iverson (1996) saw a need to acquire information for program planning. “Furthermore, since the typical member is known to have certain characteristics, the NYFEA should examine the curricular needs for both family and agricultural education delivery systems and farm business development. Finally, these data should be used to evaluate current programs and to aid in planning new programs for the NYFEA, in order to better serve the membership” (p. 46).

Program planning may be used to increase participation. C.O. Houle related why adults

participate in learning. Houle (1961) interviewed 22 active adult learners and he categorized these learners in three different ways based how they viewed the “purposes and values of continuing education” (p. 15): goal-oriented, activity-oriented, and learning-oriented. It was the latter of these groups that was of particular interest relative to self-directed learning. The learning-oriented adult was described as an adult who engages in learning purely for “the desire to know” (p. 25) (as cited in Brockett and Donaghy, 2005, p. 2).

According to Houle (1961), goal-oriented adults participate in an educational program due to their need for education or because of a personal interest. An activity-oriented adult chooses an educational program based upon the amount of social experiences with other adults. Adults who are learning-oriented perceive continued learning as a duty and believe pursuing education will enhance their lives.

Georgia Young Farmer participants may participate in programs for a variety of reasons. According to Hansman (2001), Wilson (1993) explained that “learning is an everyday event that is social in nature because it occurs with other people; it is ‘tool dependent’ because the setting provides mechanisms (computers, maps, measuring cups) that aid, and more important, structure the cognitive process; and finally, it is the interaction with the setting itself in relation to its social and tool dependent nature that determines the learning” (p. 73). In other words, learning in context is paying attention to the interaction and intersection among people, tools, and context within a learning situation. More important, for adult educators who plan and teach, it is understanding how to plan and design programs for adult learners that will profoundly shape learning (p.14).

Boone, Gartin, Wright, Lawrence, & Odell (2002) suggested that since agriculture teachers primarily teach high school age students, they need help in decision making about how to present educational programs to adults. “It is commonly accepted that adult students require different educational techniques than for teaching youth. If state supervisors and local administrators expect agricultural education programs to include an adult education component, pre-service teachers must be adequately prepared in the principles of andragogy” (p.46).

Agricultural educators should look to every source for help in educating their constituents according to Dormody, Seevers & Clason (1996) “therefore, secondary agricultural education teachers should not duplicate effort, but develop linkages through their adult organization(s) to these other programs that have the time, funding, and other resources to provide quality continuing education programs” (p.39).

#### Adults as Learners

While the amount of information surrounding adult learning is vast, research on individualized programs in agricultural education, especially as it relates to adults is only one component of that research. Researchers have studied adult agricultural education in its recent history (Boone, Gartin, Wright, Lawrence, & Odell, 2002; Birkenholz and Maricle, 1991; Birkenholz, Nur, & Stewart, 1989; Chizari and Taylor, 1991; Martin 1987; Carpentier and Iverson 1996; Trede and Whitaker, 2000) and more study will only help in continual implementation of the program. Fewer studies have been published concerning the Georgia Young Farmers Association (Boatright, 1993; Wells and Iverson, 2007).

Learning style preferences have implications to adult agriculture program planners.

Makhlouf, Witte, Fathema & Dahawy (2012) describe learning styles as simply different approaches to learning. Each individual has his/her unique way of learning. Learning style greatly affects the learning process, and, therefore, the outcome (Carver, Howard, & Lane, 1999; Vincent & Ross, 2001).

Adults desire to relate to their life experience and what they perceive as necessary. Knowles (1980) defined andragogy as the "art and science of helping adults learn" (p. 43). Adults at times are drawn to educational activities or learning by the desire to solve a problem or need. According to Malcolm Knowles, adults have a psychological need to be self-directing. (Knowles, 1978). Given that adults are not required to be educated in programs such as the Georgia Young Farmers to acquire knowledge; successful program planning has to meet their needs. "Agricultural educators should develop programs that involve a variety of instructional methods including problem-solving situations, hands-on activities, on-site instruction and single meetings" (Trede and Whitaker, 2000, p.47).

There are many angles in which to look at how agricultural educators should attempt to educate adults. One angle is to look at how adults learn. Another, which is closely related, is how adults want to learn? What is their preferred method of instruction? It would seem natural that adults would prefer learning in an instructional setting in which they learn best.

Based on these findings, allowing farmers to choose what they want to learn before planning any educational programs; and giving them opportunities to voice their views while in these sessions may motivate them to participate in educational programs.

Practical and hands-on teaching and learning methods may motivate farmers to engage in learning activities. These findings could be incorporated into teaching methods courses to

enrich the content and make adult programs in agriculture more appropriate to the needs of the clientele (Dollisso and Martin 1999 p. 44).

Since there is a tremendous amount of time and energy spent to attract farmers to training and educational experiences, there is a need to discover what method is best for presenting information. Franz, Piercy, Donaldson, Richard & Westbrook (2009) reported in a study conducted in Louisiana, Tennessee and Virginia, that detailed findings in Virginia on farmers' preferred learning methods indicate that farmers from this study most often prefer hands-on methods. In contrast, when extension agents were asked about their top six instructional delivery methods, 96 percent reported demonstration and 88 percent reported lecture as the two top methods they used most often.

Teachers educating students of any age tend to teach the way they were taught. Hammerness, et al. (2005) states "learning to teach requires that new teachers come to think about (and understand) teaching in ways quite different from what they have learned from their own experience as students" (p. 359) Lortie described this as apprenticeship of observation. Students are highly influenced by twelve or more years in a traditional classroom (Lortie, 1975). Grow (1991) recommended, however, that instructors match their teaching style to the estimated stage of self-direction of adult learners (as cited in Glickman, Gordon, & Ross-Gordon, 2010 p.53).

Self-directed learning in which there is no instructor and the individual gains knowledge because of problems solving or goals confronted in everyday life was described by Allen Tough (1971). Adult motivations to learn may be immediate, for example satisfying curiosity, or long-term such as learning how to handle a future situation (Tough, 1979). Tough (1968) stated that

each adult learner engages in a learning activity for multiple reasons, including the use of knowledge or skills to take action (as cited in Dollisso and Martin, 1999 p.39).

Providing the best programs for adult learners based on theory has been the topic of much discussion. Knowles (1980) made four basic assumptions of adult learning: 1. Adults have a psychological need to be self-directing 2. Adults bring an expansive reservoir of experience that can and should be tapped in the learning situation 3. Adults' readiness to learn is influenced by a need to solve real-life problems often related to adult developmental tasks 4. Adults are performance centered in their orientation to learning—wanting to make immediate application of knowledge. A few years later, Knowles adds a fifth assumption that adults need to be intrinsically motivated (Knowles, 1984).

Birkenholz adds to Knowles assumptions that adults bring their own individual experience into the learning process which affects learning. He also proposed that adults learn best in informal environments with variety. Instructors probably will be best served by using a variety of teaching methods (Birkenholz, 1999).

Studies have shown that farmers tend to prefer to learn experientially. Experiential learning is learning from experience or with hands on activity (Furco, 1996). The concept has a long bond with agricultural education. The FFA motto states “Learning to Do, Doing to learn, Earning to live and Living to serve” (National FFA Organization, Mission and Motto 2012 p.1). The motto suggests that youth in agricultural education will learn best by hands on activity.

Dollisso & Martin (1999) states “the results of this study show that the farmers involved in the study preferred to learn by hands-on activities” (p. 44). The discussion of how students

learn best and how experience relates to learning dates back to Dewey (1938) and Lindeman (1925).

Kolb along with Fry (1975) developed the Experiential Learning Model. Kolb approached adult learning theory through four concepts; Concrete Experience and Abstract Conceptualization, Reflective Observation and Active Experimentation. Kolb postulated that learning is best achieved by a cyclical combination of all four factors. Kolb refers to these concepts developing into four different learning styles. These learning styles are as follows: Converger; Diverger; Assimilator; Accommodator. Convergents are characterized by abstract conceptualization and active experimentation. They are good at making practical applications of ideas and using deductive reasoning to solve problems. Divergers tend toward concrete experience and reflective observation. They are imaginative and are good at coming up with ideas and seeing things from different perspectives. Assimilators are characterized by abstract conceptualization and reflective observation. They are capable of creating theoretical models by means of inductive reasoning. Accommodators use concrete experience and active experimentation. They are good at actively engaging with the world and actually doing things instead of merely reading about and studying them.

Speck (1996) claimed that adults desire to relate to their life experience and what they perceive as necessary:

1. Adults have a need to know why they should learn something.
2. Adults have a deep need to be self-directing.
3. Adults have a greater volume and different quality of experience than youth.
4. Adults become ready to learn when they experience in their life situations a need to know or be able to do in order to perform more effectively and satisfyingly.
5. Adults enter into a learning

experience with a task-centered (or problem-centered or life-centered) orientation to learning. 6. Adults are motivated to learn by both extrinsic and intrinsic motivators. (Speck, 1996).

Fleming developed a learning styles instrument called VAK which stands for visual, auditory, and kinesthetic. He espoused that visual learners prefer learning through sight. Auditory learners learn through listening and tactile/kinesthetic learners prefer to learn by experience. If a student can determine which is their best method of learning it can help them be better learners as well as help their teachers prepare (Hawk and Shah, 2007).

Realizing that all farmers do not necessarily fit into one mode, Richardson and Mustian (1994) found the need for Extension professionals to provide educational opportunities through multiple program delivery methods. Respondents indicated personal visits, meetings, newsletters, demonstrations, and workshops as most preferred delivery methods.

Referring specifically to adult learning, Hansman (2001) stated, "The nature of the interactions among learners, the tools they use within these interactions, the activity itself, and the social context in which the activity takes place shapes learning" (p.2).

If motivated, adults tend to be excellent learners. Whisnant, Sullivan & Slayton (1992) found the following: "the results of this present study confirm much of what the literature has established; namely, that older, nontraditional students perform at higher academic levels than do younger, traditional students" (p.1).

Montgomery explained the following:

The fact that students majoring in a given discipline are more likely to have particular learning style characteristics common to faculty and practitioners in that field may seem entirely consistent with common sense notions of expert competence. On the other hand,

Kolb has pointed out that selection and socialization processes may lead to such homogenous disciplinary culture that it becomes impermeable to other influences. Equally disturbing, one aspect of Kolb's research demonstrated that over time science students become more analytical and less creative, while arts students become more creative and less analytical. In other words, the educational process has the potential to accentuate the gap in capabilities between these groups of students (Montgomery & Groat, 2005, p. 4).

That is the key to learning style preferences - the individual. Each individual can hear, see, and experience the exact same incident but come away with completely individualized ideas and perceptions of what they saw, heard and internalized. When discussing students, the onus is on the instructor to instruct, educate, coach, or train the students in a manner so that they learn, discover, ascertain, or internalize the material expected by the instructor. (Perkins, 2012)

According to Dr. James Witte, Auburn University Professor of Adult Education, there are several types of learning styles; including cognitive (how we think about learning), affective (how we feel about learning), and perceptual (how we perceive our environment and how it relates to learning). When we talk about someone being a visual, auditory, or kinesthetic learner, we're talking about the perceptual learning style. According to Witte, there are four other perceptual modalities: print (seeing written words); interactive (verbalization); haptic (sense of touch or grasp); and olfactory (sense of smell and taste). Witte, who established the Institute for Learning Styles Research Journal in 2006, explains that perceptual learning has to do with the five senses and the way in which people extract information from their surroundings. "There's nothing restrictive about a learning style," Witte says. "Just because you prefer to read for

informative purposes doesn't mean you can't learn through lecture. This is where many people get it wrong, Witte explains. It's not that someone is specifically one type of learner over another; it's that individuals have preferred learning styles" (Weinstein, 2013).

### Age, Gender and Employment

Are there differences related to age, gender or employment as they relate to Georgia Young Farmers learning preferences? Johnston's and Rivera's results illustrate that perhaps not only farmers or men but that all adults are likely to desire applied, practical, hands-on learning activities over abstract (Johnston's & Rivera's, 1965).

Conversely, Pettigrew and Zakrajesk (1984) studied physical education majors and determined that males preferred hands-on learning tasks whereas females preferred a well-organized presentation of course material. In addition, Stafford and Dunn (1993) relate "Yet, many adults, especially males, maintain kinesthetic and tactual strengths throughout their lives."

In a dissertation by Endres, in which the Miller Analogies Test among others was used, it states "Age, gender, and their relationship to the MAT (Miller Analogies Test) were addressed in the second research question. Gender was not significantly related to the MAT; however, age was significant at the .05 alpha level and was the primary contributor to the multiple regression results. The major implication for instruction is that learning for the over 50 year olds via print, visual, or aural modalities may take longer. However, the over 50 years of age learners may be able to use analogical reasoning skills better than the 18-30 years of age group" (Endres, 2000).

While studying young farmer participants in Georgia, analysis will be conducted to determine if age, gender, or employment is significantly different relating to preferred learning

for this group.

### Summary

Studies to determine the best methods to help adults, center on impacting the lives of the people participating. The following is an excerpt from a study of adult ranchers and speaks to the purpose of adult education in agriculture:

“This study has shown that one statewide Extension program, the Texas A&M Ranch to Rail Program, has had an impact on the lives of the people who have participated. As a result of their participation in the program, respondents had an increase in their knowledge level of selected beef practices and an increase in the use of recommended beef production and management practices” (Kistler and Briers, 2003 p.221).

Factors that influence learning styles preferences may stem from individual differences, however, it would have major implications for Georgia adult farm program planners if differences related to various variables could be established. How farmers learn, but more importantly how they would prefer to learn is at the heart of this study. The literature demonstrates that many studies have postulated that adults learn differently than youth. It is also theorized that farmers have unique learning preferences, mainly experiential. Therefore, this study will pursue research questions relating to visual, auditory and kinesthetic learning.

We may assume that an adult farmer would have the same basic goals as other adults. The literature also leads one to believe that an adult due to some change in their life may desire to learn something new. While they enjoy companionship and socializing with others during learning, many still have a need for the learning to be self-directed. Regardless, it will be

important to establish the preferred learning of the Georgia Young Farmer participants.

## Chapter 3

### Methodology

#### Introduction

The purposes of this quantitative descriptive, assessment of group differences, and correlational study were to describe the preferred learning styles of Young Farmer Educational Association participants. A 30 item survey instrument was designed to include 10 questions each for preferences in visual, auditory and kinesthetic learning. These questions relating to the three constructs were transformed into three subscales. A within-subjects analysis of variance (ANOVA) was used to determine if there was any statistical difference between the three subscale scores. A within-subjects analysis to address differences in the three dependent learning variables is used when the participants are connected in some way (Ross and Shannon, 2008).

A between-groups multivariate analysis of variance (MANOVA) was used to determine the answer to the next three research questions. Questions 2-4 sought to find if any statistically significant differences occurred for preferred learning styles between gender, age ranges, and young farmers engaged in various types of employment.

#### Research Questions

The study attempted to answer the following research questions:

1. Do Young Farmer adult participant's preferred learning methods for visual, auditory and kinesthetic differ?
2. Do Young Farmer adult participant's preferred learning methods differ between gender and their preferred learning styles?

3. Do Young Farmer adult participant's preferred learning methods differ between age range and their preferred learning styles?
4. Do Young Farmer adult participant's preferred learning methods differ between occupation and their preferred learning styles?

### Design of the Study

The research design of this quantitative study was descriptive, correlational, and assessed group differences. The sample consisted of Georgia Young Farmer participants in local educational meetings at seventeen separate county groups in the months of January-March of 2013. The study was used to acquire information to describe the preferred learning styles of Georgia Young Farmer Educational Association participants and determine if statistically significant differences occurred in preferred learning styles subgroups of visual, auditory and kinesthetic. In addition, data was collected to determine if significant differences in learning preferences exist between gender, age ranges, and employment.

### Population

The adult young farmer participants in the study included members of the Georgia Young Farmer members and meeting participants who attended local young farmer meetings in February and March of 2013. The total population of the Georgia Young Farmers was 4350 members. However, Young Farmer Advisors were surveyed by email as to the average number of members who attend monthly meetings in late December of 2012. A phone call was made two weeks later to all advisors who did not respond by email. The total number of surveys that were presented to the advisors at the Georgia Agriculture Education Mid-Winter Conference on

January 22, 2012 was 1500. The teachers were given the surveys and asked to present them at meetings. Survey data was collected and returned by seventeen separate Young Farmer groups. (n=340) Teachers from the following 18 Georgia Counties returned data: Appling, Bacon, Ben Hill, Candler, Chattooga, Colquitt, Effingham, Emanuel, Floyd, Franklin, Gordon, Grady, Jackson, Laurens, Lowndes, Marion, Seminole, and Wayne. Data from Chattooga County was used in the pilot study. The sample obtained from the population (N=340) included participants (291 males and 49 females) from 17 Young Farmer groups that returned questionnaires from the 52 programs (31% of programs). The participants consisted of both male and females and ages 19 and above.

This study was conducted in the state of Georgia with a goal of receiving data from 52 Georgia Counties.

### Measures

The idea for the instrument utilized to measure preferred methods of learning was developed by the researcher after reviewing the study “Assessing the Learning Styles of Iowa Farmers” by Trede & Miller (2000). The questions that were in that study’s questionnaire were used as a guide. There were 26 questions in the Trede & Miller study. These questions were changed in format with three question examples not used at all. After review of the literature on visual, auditory and kinesthetic learning (Dunn, 1983, 1984; Reinert, 1976; Russell 2006; DiCarlo & Lujan, 2006 ; Gilakjani, 2011; Reid,1987) a new instrument was developed with 30 questions that divided into the three constructs of visual learning preferences, auditory learning preferences and kinesthetic learning preferences. Research suggested that children as well as

adults' basic learning styles were visual, auditory and kinesthetic. The questions in the survey instrument used examples related to farming and agriculture. They were then reviewed by a panel of six university professors with expertise in adult education, statistical analysis, career and technical education, animal science and agricultural communications for content and face validity.

### Pilot Study

The instrument was initially field tested at the Chattooga County Young Farmer meeting in September 2012 by thirty participants. According to van Teijlingen and Hundley (2001) "The term 'pilot studies' refers to mini versions of a full-scale study (also called 'feasibility' studies), as well as the specific pre-testing of a particular research instrument such as a questionnaire or interview schedule. Pilot studies are a crucial element of a good study design." (p.1).

After the initial test, the instrument was changed from a 5 point Likert scale to a 4 point likert scale. Questions were again reviewed for outliers and edited for face and content validity. The instrument was formatted in an easier arrangement for respondents. In addition, demographics were gathered to be used to derive correlational data concerning gender, age range, farming operation type, and agricultural employment.

The statements were grouped together in reverse alphabetical order (Visual, Kinesthetic/Experiential and Auditory). Later, a group of 30 random numbers were obtained and assigned to each question, thus placing the survey questions in terms of learning styles in random order. The responses were; very effective, effective, ineffective or very ineffective. The response "no option" was dropped.

The instrument was again tested in a population of 50 respondents at the Northwest Georgia Master Cattleman’s final meeting in Calhoun Georgia in October of 2012.

The field test with the Georgia Master Cattlemen students was used to determine reliability of a newly formed survey instrument. Cronbach’s alpha index for the 29\* question survey was alpha= .807. Cronbach’s alpha was also determined for the visual learning questions and returned a score of .769, while auditory learning yielded .769. and kinesthetic learning reliability was .600. The study continued with the expectation that reliability with a larger sample would yield similar or higher results relating to reliability.

*\*One question, “repair something on my own” was inadvertently left off of the questionnaire*

Table 1

*Cronbach’s Alpha for pilot study and Georgia Young Farmer participants*

	n	Total $\alpha$	Visual Cronbach's $\alpha$	Auditory Cronbach's $\alpha$	Kinesthetic Cronbach's $\alpha$
Master Cattlemen	50	.807	.769	.769	.600
Georgia Young Farmers	340	.966	.737	.734	.759

*Note. MC stands for Master Cattlemen, GYFP stands for Georgia Young Farmer Participants*

When reliability was checked at the completion of the study with a much larger population (n=340) Cronbach’s alpha index for the 30 question survey was .966. In addition the

reliability index for kinesthetic learning was increased while visual learning and auditory learning had an insignificant decrease. (Table 1)

The Master Cattlemen study survey questions were reviewed to determine what constructs were being chosen most often by mean and to estimate for external validity to be compared to the future Georgia Young Farmer participants study. Kinesthetic responses received the highest mean and questions were ranked by mean and standard deviation as follows:

Table 2

*Rank by mean and standard deviation of pilot question responses*

*Master Cattlemen Pilot Study/ Questions Rank*

	Mean	Std. Deviation
1) Complete a hands-on task while an instructor gives help or information	3.7600	.43142
2) Attend a workshop where participants complete hands on task	3.6600	.51942
3) Spend a day “on-the-job” training with an experienced farmer	3.5400	.76158
4) While shopping for a new tractor, viewing photographs of several possible models	3.4400	.61146
5) Have an agent or teacher one-on one make a home visit to train me in a task	3.4400	.61146
6) Attend a farming organization workshop where time is given for discussion	3.2400	.71600
7) Question other farmers about their success	3.1200	.74615
8) Attend field days, tours of farms where hands on tasks are completed by attendees	3.1200	.62727
9) Use a consultant that shows me how to perform a tas	3.1200	.74615
10) Participate in a seminar sponsored by an agribusiness where ideas are exchanged	3.0600	.71171
11) Attend a series of meetings with information on a screen with Power Point presentation	3.0400	.60474
12) Attend a round table discussion where I listen to farmer’s discussion	3.0200	.71400
13) Watch a demonstration in a classroom	3.0200	.74203

14) Exchanging ideas in a meeting sponsored by a local farmer organization	2.9600	.63760
15) Attempt a new skill on my farm without outside instruction	2.9000	.67763
16) Participate in a community college credit class where discussion is encouraged	2.9000	.64681
17) Attend a series of in-depth meetings on a specific topic presented by lecture only	2.9000	.73540
18) Assembling new equipment on my own	2.8400	.76559
19) Watch an educational video tape	2.8200	.71969
20) Attend a meeting by a farm organization where charts and graphs are used	2.7400	.75078
21) Read and study trade publications and technical journals	2.7400	.69429
22) Work on my tractor after reading instructions in the owner's manual	2.7200	.83397
23) Determine which new cattle breed to buy by reading information about them online	2.6800	.76772
24) Read and study a text book	2.6600	.74532
25) Read a pamphlet to obtain instructions on how to calibrate a sprayer	2.5600	.76024
26) Attend a speech on a specific topic presented by an expert	2.5400	.73429
27) Listen to a panel talking on a specific agricultural topic	2.5200	.76238
28) Take a trade course which emphasizes doing projects	2.4200	.78480
29) Listen to an audio tape on a specific topic	2.1400	.75620

Next, the instrument was given to 29 Georgia Young Farmer participants in Gordon County, Georgia. The VARK is a nationally known learning styles instrument. In an attempt to find concurrent validity between the VARK and the study's research instrument both instruments were given to Gordon County Georgia Young farmer participants.

Written permission was given by VARK designer Neil Fleming. (Appendix1). The VARK is a learning styles instrument that tests for visual, auditory, reading and kinesthetic learning styles (Marcy 2001).

Comparing the means of the two instruments yielded no correlation between the two. In addition, there were significant differences between each of the learning preferences. Pearson

correlations were run and yielded no significance. When the means for visual, auditory and kinesthetic learning were compared between the VARK and the study's instrument, the following results were obtained:

Table 3

*Correlations between VARK and Survey Questionnaire*

<i>Construct</i>	<i>Pearson r</i>	<i>p</i>
Visual	.072	.726
Auditory	.142	.488
Kinesthetic	.070	.733

*VARK stands for visual, auditory, reading and kinesthetic*

There are a few possibilities of why there were no correlations between the two aforementioned instruments. This study's questionnaire attempts to determine Georgia Young Farmers preferred learning style whereas the VARK attempts to determine the actual learning style for participants, secondly, this study's questionnaire is set up as a four point Likert questionnaire with 30 questions relating to visual, kinesthetic and auditory learning based on an opinion from very ineffective to very effective. Whereas the VARK asks for one to choose which activity they would prefer and then correlates that back to a learning style. In addition, the VARK now includes choices for reading which is combined in the current instrument with visual as was the original VAK. Finally, the study's instrument uses specific examples relating to situational learning that are tied to agricultural examples, whereas the VARK does not.

Leite, Svinicki, & Shi, 2010 studied the validity of the VARK instrument:

A second use of the VARK that has been considered is as a research instrument whose scores could serve as predictors or outcomes for the evaluation of instructional methods. Although the information about dimensionality and reliability of the VARK scores reported in this paper are important pieces of evidence of validity, they are not sufficient to support the use of the VARK with research. Before the VARK is used with research, other sources of evidence of the validity of its scores should be collected. In this study, we focused on validity evidence with respect to VARK's internal structure. However, validity evidence with respect to content, response process, relations with other variables (i.e., convergent, discriminant, and test-criterion relationships), and consequences of testing should be obtained to build a strong argument for the validity of VARK scores' use with research (p.336)

Wehrwin, Lujan, & DiCarlo (2006) point out that "This survey has not been statistically validated and that represents a limitation to this study. Educational investigators have been attempting to find a way to validate VARK. Unfortunately, they have not been able to find a satisfactory statistical method that validates the four-factor model that is the basis of VARK" (p.1)

The sample included the 17 Georgia Young Farmer Programs who responded to John Bridges, Georgia's State Director of Agricultural Education and Lynn Barber, Georgia's State Young Farmer Advisor's written and verbal requests for Georgia Young Farmer research study information. (n=340).

Each one of the question responses were assigned a number on a 4 point scale with

1=very ineffective, 2=ineffective, 3=effective, and 4=very effective. A mean was calculated for each individual question and the questions were ranked from largest mean to smallest. From this grouping another construct surfaced. It appeared that not only was there a significant difference in preferred learning styles, but that there could be a significant difference between the types of educational settings. The questions were further evaluated for construct, face and content validity and grouped into three categories: individualized instruction, self- instruction and group instruction.

### Procedures

The instruments were given by pencil and paper to the participants by their Georgia Young Farmer Teacher at a regular educational program between the months of January 2013 and April 2013.

Each Young Farmer teacher in Georgia was interviewed ahead of time by email and a follow up telephone call to non- responders in an effort to determine an average attendance for their adult farmer educational meetings.

Later survey questionnaires were given to 50 of 52 Georgia Young Farmer teachers at the Winter Agricultural Education Conference in January of 2013. Two absent teachers were sent the survey through regular mail. At the conference they were given a bag containing instructions, permission forms and surveys along with a stamped addressed envelope to return the surveys and forms.

The data consist of the four learning style preferences obtained from 340 Georgia Young Farmer survey results. The 30 forced-choice questions were combined with the descriptive data onto Excel an electronic spreadsheet for analysis (Appendix 2) Version 21 of SPSS was used to

analyze the data. All data were handled in compliance with the Institutional Review Board at the university (see Appendix 3).

The entire membership for 2012 was 4576. The population (N=340) included participants from 17 groups that returned questionnaires (31% of programs). Earlier, in October of 2012, the questionnaire was also given to a group of Georgia Master Cattlemen participants in Calhoun Georgia for the purpose of determining the reliability of the instrument and to look for inconsistent results that might be corrected. Data from this group were used in the total population and separately.

Each group of the survey questions relating to individual constructs were transformed into one dependent variable. A subgroup was formed for visual preferred learning, auditory preferred learning and kinesthetic preferred learning.

#### Analysis of Data

A within subjects repeated measures ANOVA was then utilized to determine if significant differences existed between the three subgroups. Partial eta squared was used to determine the effect.

Next a Multivariate Analysis of Variance (MANOVA) determined if significant differences exist between any one of the three subgroups and any one of three independent variables of gender, age, and employment. A post-hoc comparison was then run (Bonferroni) and yielded significant difference between the means of three subgroups.

## Summary

This chapter repeated the purpose of the study, the research questions and the hypothesis. Further, this chapter described the background of the Georgia Young Farmers and the relationship this group has to adult learning. The procedures of the study and the instrumentation were investigated and discussed. The chapter concluded with a discussion of the reliability and validity of the instrument and an explanation of the analysis of data that was used. The data dictated that descriptive statistics be used. In addition, each of the survey questions relating to individual constructs was transformed into one dependent variable. A subgroup was formed for visual preferred learning, auditory preferred learning and kinesthetic preferred learning.

A between subjects repeated measures analysis of variance (ANOVA) was then utilized to determine if significant differences existed between the three subgroups. Partial eta squared was used to determine the effect.

Next a multivariate analysis of variance (MANOVA) was used to determine if significant differences existed between any one of the three subgroups and any one of three independent variables of gender, age, and employment.

## Chapter 4

### Introduction

The purposes of this quantitative descriptive and correlational study were to describe the learning preferences of Georgia Young Farmer participants and determine if significant differences exist between scores relating to visual, auditory and kinesthetic learning styles.

The entire membership for 2012 of the Georgia Young Farmers was 4576. However, there may have been attendees at meetings that have not joined the state organization. The obtained population (N=340) included participants (291 males and 49 females) from 17 Young Farmer groups that returned questionnaires from the 52 programs (31% of programs).

The instrument was designed to yield subscale scores that indicate preferences for visual, auditory, and kinesthetic learning styles using agricultural learning situations as examples.

Descriptive statistics helped to explain the types of learning experiences that the participants prefer. In comparing the three subgroups, the highest mean on a four point scale was for kinesthetic (3.13), followed by auditory (2.82) and finally visual (2.70).

The repeated measure within subjects analysis yielded an F test indicating a significant difference within the three learning preference means of participants ( $F=202.736$ ,  $p < .001$ ).

A multivariate between-subjects MANOVA was then used for research questions 2-4. The analysis applied to gender, age levels and employment showed no significant differences.

During analysis, the question mean totals suggested that participants were choosing responses related to the educational setting as well as learning styles. This led to further analysis of this data and findings are reported.

The statistical results to the following research questions were reported:

1. Do Young Farmer adult participant's preferred learning methods for visual, auditory and kinesthetic differ?
2. Do Young Farmer adult participant's preferred learning methods differ between gender and their preferred learning styles?
3. Do Young Farmer adult participant's preferred learning methods differ between age range and their preferred learning styles?
4. Do Young Farmer adult participant's preferred learning methods differ between occupation and their preferred learning styles?

#### Descriptive Statistics of Study Sample

The sample of Georgia Young Farmer participants consisted of 285 males (83%) and 47 (14%) females with 8 (3%) giving no response. (Table 4)

Table 4

#### *Between Subjects Factors-Gender*

Value Label	Gender	N
1.00	Male	285
2.00	Female	47

The sample of Georgia Young Farmer participants consisted of 49 participants age 20-27 (14%), 46 participants age 28-35 (14%), 43 participants age 36-42 (13%), 41 participants age 43-49 (12%), 154 participants age 50 and older (45%) and 7 participants no responses (2%). (See Table 5)

Table 5

*Between-Subjects Factors-Age Level*

Value Level	Age	N
1.00	20-27 Years Old	49
2.00	28-35 Years Old	46
3.00	36-42 Years Old	43
4.00	43-49 Years Old	41
5.00	50 Years Old Or Older	154

The sample of Georgia Young Farmer participants consisted of 141 full time farmers (41%), 121 part-time farmers (41%), 28 agricultural employees (8%) and 40 participants not employed in agriculture (12%). (Table 6)

Table 6

*Between Subjects Factors-Employment Type*

Value Level	Employment Type	N
1.00	Full Time Farmer	141
2.00	Part Time Farmer	121
3.00	Ag Professional	28
4.00	Not Employed in Agriculture	40

Of the 1500 surveys given out, 340 were returned or 23%. In addition, of the 52 programs given packets, 17 responded and 1 was used to develop the instrument (Chattooga County) for a total response rate of 35% of the programs.

## Learning Style Preference Results

Questions for each construct (visual, auditory and kinesthetic learning preference) were transformed into three scores. These scores were computed to represent the three learning preference constructs.

A within-subjects repeated measures analysis of variance (ANOVA) was used for analysis. The F statistic was computed using a within-subjects ANOVA to compare three subgroups of learning styles for a significant difference for visual, auditory or kinesthetic learning preferences. (Table 7)

### Research Question 1

Do Young Farmer adult participant's preferred learning methods for visual, auditory and kinesthetic differ?

Table 7

#### *Georgia Young Farmer Preferred Learning Styles Data*

	Visual	Auditory	Kinesthetic			
Test	Mean (SD)	Mean (SD)	Mean (SD)	<i>F</i>	<i>p</i>	Effect Size
Data	2.68 (.39)	2.82 (.37)	3.11 (.40)	202.74	<.01	partial $\eta^2 = .374$

*Note: SD stands for standard deviation*

## Research Question One Findings

In order to assess whether or not Georgia Young Farmer participants preferred learning styles differ at a statistically significant level between visual, auditory and kinesthetic learning, a three level within-subjects analysis of variance (ANOVA) was completed with the scores on the preferred learning style subgroups as the dependent variables. Alphas was set a.05 and results were statistically significantly different in the preferred learning styles for visual, auditory or kinesthetic learning styles.  $F(1, 339) = 202.74, p < .0001$ ; partial  $\eta^2 = .374$ . A post-hoc comparison was also run (Bonferroni) and yielded significant difference  $p < .001$ .

These results suggest that preferred learning styles for visual, auditory and kinesthetic are significantly different from each other for Georgia Young Farmer participants.

Additionally, the effect size was large, partial  $\eta^2 = .374$ , suggesting that results are meaningfully different and this study would allow these results to be used by Georgia Young Farmer Teachers for educational program planning.

The descriptive statistics and the overall analysis of variance are shown below. The survey was on a four point scale with one being the choice for *very ineffective* and four being *very effective*, with higher values indicating a more positive response. Review of the means show group mean differences between kinesthetic, auditory and visual learning preferences in that order.

Table 8

*Descriptive Statistics Within-Subjects Factors*

Construct	Mean	Standard Deviation	n
Kinesthetic Total	3.1148	.40422	340
Auditory Total	2.8191	.36558	340
Visual Total	2.6837	.39041	340

Next, using descriptive statistics the entire survey was ranked by mean and standard deviation for the purpose of evaluation by program planners. (See table 9)

The mean for kinesthetic learning was greatest (3.1148), indicating a preference for this style of learning, with seven of the top ten responses were kinesthetic related question choices. The next largest mean related to auditory (2.8191) with the remaining three top tier choices. All visual choice means (2.6837) fell below the median (2.88).

Table 9 *Rank by mean and standard deviation of Georgia Young Farmer Participant responses*

Georgia Young Farmer Participants Learning Preferences Ranked By Means	Construct	Mean	Std. Dev.
1) Spend a day “on-the-job” training with an experienced farmer	K	3.478	0.7149
2) Complete a hands-on task while an instructor gives help or information	K	3.411	0.6750
3) Attend a workshop where participants complete hands on task	K	3.315	0.6725
4) Attend field days, tours of farms where hands on tasks are completed by attendees	K	3.267	0.6445
5) Exchanging ideas in a meeting sponsored by a local farmer organization	A	3.256	0.6353
6) Question other farmers about their success	A	3.173	0.6715
7) Have an agent or teacher one-on one make a home visit to train me in a task	K	3.147	0.7717
8) Repair something on my own	K	3.073	0.7818
9) Have a consultant instruct me while I perform a task	K	3.053	0.6631
10) Attend a farming organization workshop where time is given for discussion	A	2.979	0.6307
11) Attend a round table discussion where I listen to farmer’s discussion	A	2.973	0.7014
12) Watch a demonstration in a classroom	V	2.929	0.6479
13) Participate in a seminar sponsored by an agribusiness where ideas are exchanged	A	2.927	0.6076

14) Attend a series of meetings with information on a screen with Power Point presentation	V	2.914	0.6529
15) Work on my tractor after reading instructions in the owner's manual	V	2.891	0.7926
16) Assembling new equipment on my own	K	2.873	0.8228
17) Attend a speech on a specific topic presented by an expert	A	2.858	0.6677
18) Attempt a new skill on my farm without outside instruction	K	2.814	0.8260
19) Watch an educational video tape	V	2.803	0.6602
20) Take a trade course which emphasizes doing projects	K	2.739	0.7544
21) Attend a meeting by a farm organization where charts and graphs are used	V	2.719	0.6789
22) Listen to a panel talking on a specific agricultural topic	A	2.706	0.6709
23) Participate in a community college credit class where discussion is encouraged	A	2.587	0.7205
25) Read a pamphlet to obtain instructions on how to calibrate a sprayer	V	2.561	0.7514
26) Determine which new cattle breed to buy by reading information about them online	V	2.538	0.7373
27) Read and study trade publications and technical journals	V	2.491	0.6848
28) Attend a series of in-depth meetings on a specific topic presented by lecture only	A	2.479	0.7424
29) Read and study a text book for information	V	2.408	0.7487
30) Listen to an audio tape on a specific topic	A	2.255	0.7131

Information relating to each construct were ranked for each survey question. Below are tables ranked by mean and standard deviation. (Table 10-12)

Table 10 Rank by mean and standard deviation of Georgia Young Farmer Participant Kinesthetic Preferences by response

Georgia Young Farmer Kinesthetic Preferences Ranked By Mean	Mean	Std. Dev.
1) Spend a day "on-the-job" training with an experienced farmer	3.4783	0.7149
2) Complete a hands-on task while an instructor gives help or information	3.4114	0.6750
3) Attend a workshop where participants complete hands on task	3.3147	0.6725
4) Attend field days, tours of farms where hands on tasks are completed by attendees	3.2669	0.6445
5) Have an agent or teacher one-on one make a home visit to train me in a task	3.1474	0.7717
6) Repair something on my own	3.0728	0.7818
7) Use a consultant that shows me how to perform a task	3.0526	0.6631
8) Assembling new equipment on my own	2.8728	0.8228
9) Attempt a new skill on my farm without outside instruction	2.8143	0.8260
10) Take a trade course which emphasizes doing projects	2.7393	0.7544

Table 11 Rank by mean and standard deviation of Georgia Young Farmer Participant Auditory Preferences by response

Georgia Young Farmer Participants Auditory Preferences Ranked By Means	Mean	Std. Dev.
1) Exchanging ideas in a meeting sponsored by a local farmer organization	3.2555	0.6353
2) Question other farmers about their success	3.1728	0.6715
3) Attend a farming organization workshop where time is given for discussion	2.979	0.6307
4) Attend a round table discussion where I listen to farmer's discussion	2.9728	0.7014
5) Participate in a seminar sponsored by an agribusiness where ideas are exchanged	2.9265	0.6076
6) Attend a speech on a specific topic presented by an expert	2.8577	0.6677
7) Listen to a panel talking on a specific agricultural topic	2.7059	0.6709
8) Participate in a community college credit class where discussion is encouraged	2.5867	0.7205
9) Attend a series of in-depth meetings on a specific topic presented by lecture only	2.4794	0.7424
10) Listen to an audio tape on a specific topic	2.2551	0.7131

Table 12 Rank by mean and standard deviation of Georgia Young Farmer Participant Visual Preferences by response

Georgia Young Farmer Participants Visual Preferences Ranked By Means	Mean	Std. Dev.
1) Watch a demonstration in a classroom	2.9294	0.6479
2) Attend a series of meetings with information on a screen with Power Point presentation	2.9136	0.6520
3) Work on my tractor after reading instructions in the owner's manual	2.8912	0.7926
4) Watch an educational video tape	2.8029	0.6602
5) Attend a meeting by a farm organization where charts and graphs are used	2.7194	0.6789
6) While shopping for a new tractor, viewing photographs of several possible models	2.5824	0.8213
7) Read a pamphlet to obtain instructions on how to calibrate a sprayer	2.5606	0.7514
8) Determine which new cattle breed to buy by reading information about them online	2.5375	0.7373
9) Read and study trade publications and technical journals	2.4912	0.6848
10) Read and study a text book	2.4084	0.7487

## Research Question 2

Do Young Farmer adult participant's preferred learning methods differ between gender and their preferred learning styles?

The first independent variable analyzed in relationship to preferred learning was gender. A multivariate analysis of variance (MANOVA) was used to examine the association between learning preferences. Gender served as the independent variable, and visual, auditory and kinesthetic learning preferences as the dependent variables, the interaction between gender and learning preferences were not significant (Wilks' Lambda=.911,  $F(3,327)=1.044$ ,  $p>0.05$ ). In addition, the effect size was low (partial  $\eta^2=.009$ ). (See table 13)

Table 13

### *Between Subjects Data for Georgia Young Farmer Participants-Gender*

Data from the MANOVA suggests that gender does not significantly result in differences for preferred learning styles of Georgia Young Farmer participants.

Learning Style	Male Mean (SD)	Female Mean (SD)	<i>F</i>	<i>p</i>	Effect Size
V	2.68 (.391)	2.68 (.411)	.000	.987	.000
A	2.81 (.371)	2.85 (.322)	.664	.416	.002
K	3.12 (.404)	3.06 (.409)	1.07	.302	.003

*Note: A multivariate comparison resulted in Wilks' Lambda =.911,  $F(3,327)=1.044$ ,  $p>0.05$*

Research Question 3

Do Young Farmer adult participant’s preferred learning methods differ between age level and their preferred learning styles?

The second independent variable analyzed in relationship to preferred learning was age level. A multivariate analysis of variance (MANOVA) was used to examine the association between learning preferences. Age level served as the independent variable, and visual, auditory and kinesthetic learning preferences as the dependent variables, the interaction between age level and learning preferences were not significant. Wilks’ Lambda=.957,  $F(12, 862)=1.190$ ,  $p>0.05$ . In addition, the effect size was low ( $\text{partial } \eta^2=.014$ ). (See table 14)

Table 14

*Between Subjects Data for Georgia Young Farmer Participants-Age Level*

Learning Style	Age - 20-27	Age – 28-35	Age – 36-42	Age – 43-49	Age – 50 or above	<i>F</i>	<i>p</i>	Effect Size
	Mean (SD)							
V	2.61 (.428)	2.69 (.360)	2.79 (.400)	2.58 (.331)	2.69 (.399)	1.862	.117	.022
A	2.77 (.395)	2.85 (.261)	2.84 (.408)	2.72 (.357)	2.83 (.377)	1.131	.342	.014
K	3.06 (.434)	3.12 (.383)	3.20 (.451)	3.09 (.451)	3.08 (.372)	1.417	.228	.017

*Note: A multivariate comparison resulted in a Wilks’ Lambda of 1.190,  $p=.285$*

Data from the MANOVA suggests that age level does not significantly result in differences for preferred learning styles of Georgia Young Farmer participants.

Research Question 4

Do Young Farmer adult participant’s preferred learning methods differ between employment and their preferred learning styles?

The third independent variable analyzed in relationship to preferred learning was employment. A multivariate analysis of variance (MANOVA) was used to examine the association between learning preferences. Employment served as the independent variable, and visual, auditory and kinesthetic learning preferences as the dependent variables, the interaction between employment and learning preferences were not significant. Wilks’ Lambda=.976, F (12,857) =.670,  $p>0.05$ ). In addition, the effect size was low (partial  $\eta^2=.008$ ). (See Table 15)

Table 15

*Between Subjects Data for Georgia Young Farmer Participants-Employment Type*

Learning Style	Full time Farmer	Part-time Farmer	Ag Professional	Not Employed/Agriculture	F	p	Effect Size
	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)			
V	2.69 (.414)	2.67 (.382)	2.75 (.423)	2.66 (.324)	.843	.499	.010
A	2.81 (.366)	2.80 (.385)	2.86 (.417)	2.86 (.275)	.779	.539	.009
K	3.14 (.378)	3.11 (.413)	3.12 (.434)	3.05 (.469)	.463	.763	.006

*Note: A multivariate comparison resulted in a Wilks' Lambda of .670,  $p = .783$*

Data from the MANOVA suggests that employment related to agriculture does not significantly result in differences for preferred learning styles of Georgia Young Farmer participants.

#### Additional Analysis

When the results were analyzed each one of the question responses were assigned a number on a 4 point scale with 1=very ineffective 2=ineffective 3=effective and 4=very effective. A mean was calculated for each individual question and the questions were ranked from largest mean to smallest. From this grouping another construct surfaced. It appeared that not only was there a significant difference in preferred learning styles, but that there could be a significant difference between the types of educational settings. The questions were further evaluated for construct, face and content validity and grouped into three categories: individualized instruction, self- instruction and group instruction. A decision was made to include the Georgia Master Cattlemen data along with the Georgia Young Farmer participants.

From the review of the literature Speck's theory suggests that Adults have a need to be self -directing and learn when they experience life situations that cause them to need to know in order to perform more effectively and satisfyingly (Speck, 1996).

In addition, Houle relates that adults are either goal-oriented, social, are learn for the sake of learning (Hiemstra and Brockett, 1994). Speck and Houle both direct our attention to theory that adults at least part of the time have a specific need for learning certain things. Therefore, it is possible that the concept of learning in a situation where the adult can interact one on one and the

learning situation is personal and also intense seems entirely plausible from the constructs that emerged in this study.

In the literature as well, is the idea that it is likely that adults are in different stages regarding self-directed learning (Grow 1991). Self-directed learning in which there is no instructor and a person gains knowledge because of problems solving or goals confronted in everyday life was described by Allen Tough (1971).

Adult motivations to learn may be immediate, for example satisfying curiosity, or long-term such as learning how to handle a future situation (Tough, 1979). Tough (1968) stated that each adult learner engages in a learning activity for multiple reasons, including the use of knowledge or skills to take action. (Dollisso and Martin,1999). One of Knowles postulates is that adults are performance centered in their orientation to learning—wanting to make immediate application of knowledge (Knowles, 1984).

*These questions were reviewed for preferred individual instruction validity:*

- 1) Spend a day “on-the-job” training with an experienced farmer
- 2) Complete a hands-on task while an instructor gives help or information
- 3) Attend a workshop where participants complete hands on task
- 4) Exchanging ideas in a meeting sponsored by a local farmer organization
- 5) Attend field days, tours of farms where hands on tasks are completed by attendees
- 6) Question other farmers about their success
- 7) Have a consultant instruct me while I perform a task
- 8) Attend a farming organization workshop where time is given for discussion
- 9) Have an agent or teacher one-on-one make a home visit to train me in a task
- 10) Take a trade course which emphasizes doing projects

*These questions were reviewed for preferred self-instruction validity:*

- 1) Assembling new equipment on my own
- 2) Work on my tractor after reading instructions in the owner's manual
- 3) Attempt a new skill on my farm without outside instruction
- 4) Watch an educational video tape
- 5) Repair something on my own
- 6) While shopping for a new tractor, viewing photographs of several possible models
- 7) Read and study a text book for information
- 8) Determine which new cattle breed to buy by reading information about them online
- 9) Read a pamphlet to obtain instructions on how to calibrate a sprayer
- 10) Read and study trade publications and technical journal
- 11) Listen to an audio tape on a specific topic

*These questions were reviewed for preferred group instruction validity:*

- 1) Watch a demonstration in a classroom
- 2) Participate in a seminar sponsored by an agribusiness where ideas are exchanged
- 3) Participate in a community college credit class where discussion is encouraged
- 4) Attend a series of in-depth meetings on a specific topic presented by lecture only
- 5) Attend a round table discussion where I listen to farmer's discussion
- 6) Attend a series of meetings with information on a screen with Power Point presentation
- 7) Attend a speech on a specific topic presented by an expert
- 8) Attend a meeting by a farm organization where charts and graphs are used

9) Listen to a panel talking on a specific agricultural topic

The educational settings data was analyzed for reliability. Cronbach's Coefficient Alpha for individualized learning was .756, group learning was .716 and self-instruction was .735. The total sample yielded a coefficient of .859. (Table 16)

Table 16

*Cronbach's Alpha Index Reliability-Young Farmer (Settings)*

<i>Total Cronbach's <math>\alpha</math></i>	<i>Individualized Cronbach's <math>\alpha</math></i>	<i>Group Cronbach's <math>\alpha</math></i>	<i>Self-instruction Cronbach's <math>\alpha</math></i>
.859	.769	.716	.735

Afterward, each group of questions were transformed into single variables and a within subjects repeated measures was applied and a significant difference was found between the three constructs.

Questions for each construct was transformed into one computed variable using SPSS. A within subjects repeated measures analysis of variance was used. The F statistic was computed using the within-subjects ANOVA to compare three subsets of learning styles for a significant difference in individualized, self-instruction and group instruction settings.

The findings were reviewed and a determination was made to run a within-subjects analysis (ANOVA) based on preferred educational settings. The purpose of this additional study was to establish if Georgia Young Farmer participants preferred learning styles differ at a statistically significant level between individualized, self-instruction and group learning. If this demonstrates that there is a significant difference between the three learning settings it could better explain what Georgia Young farmer prefer for instruction. A three level within-subjects

analysis of variance (ANOVA) was completed with the scores on the preferred learning settings subgroups as the dependent variables. Alpha was set a.05 and results were statistically significant different in the preferred learning styles between individualized, self-instruction and group learning.  $F(1, 390) = 416.93, p < .0001$ ; partial  $\eta^2 = .517$ . A post-hoc comparison was also run (Bonferroni) and yielded significant difference within the three constructs.

These results suggest that preferred learning styles for visual, auditory and kinesthetic are significantly different from each other for Georgia Young Farmer participants.

Additionally, the effect size was large, partial  $\eta^2 = .517$ , suggesting that results are meaningfully different and this study would allow these results to be used by Georgia Young Farmer Teachers for educational program planning.

Table 17

*Georgia Young Farmer Preferred Learning Styles Data*

Individual	Self-Learning	Group Instruction			
Mean (SD)	Mean (SD)	Mean (SD)	<i>F</i>	<i>p</i>	Effect Size
3.24 (.392)	2.79 (.383)	2.67 (.392)	416.93	.000	.517

This data indicates that there is a strong difference between three preferred educational settings for Georgia Young Farmer participants in this study. These findings coupled with the findings related to preferred learning styles indicate that information may be used to provide insight to how adults in agriculture learn best.

Furthermore, the means for each of the three learning preferences are ranked as follows: Individual=3.2463, group=2.6736 and Self learning= 2.7963, leading to the assumption that

Georgia Young Farmers and Master Cattlemen participants most prefer individual instruction and prefer self-learning the least.

The following table describes how the responses ranked for individual, self-instruction and group learning by means and standard deviation.

Table 18

*Georgia Young Farmers / Learning Settings Questions Rank*

	Construct	Mean	Std. Deviation
1) Spend a day “on-the-job” training with an experienced farmer	I	3.487	0.72056
2) Complete a hands-on task while an instructor gives help or information	I	3.453	0.65848
3) Attend a workshop where participants complete hands on task	I	3.359	0.66445
4) Exchanging ideas in a meeting sponsored by a local farmer organization	I	3.246	0.64389
5) Attend field days, tours of farms where hands on tasks are completed by attendees	I	3.220	0.64341
6) Question other farmers about their success	I	3.186	0.75848
7) Have a consultant instruct me while I perform a task	I	3.179	0.66268
8) Attend a farming organization workshop where time is given for discussion	S	3.073	0.78059
9) Have an agent or teacher one-on-one make a home visit to train me in a task	I	3.059	0.67454
10) Take a trade course which emphasizes doing projects	I	3.007	0.64578
11) Assembling new equipment on my own	G	2.976	0.70396
12) Work on my tractor after reading instructions in the owner’s manual	G	2.941	0.65954
13) Attempt a new skill on my farm without outside instruction	G	2.940	0.62182
14) Watch an educational video tape	G	2.927	0.65094
15) Repair something on my own	S	2.873	0.78654
16) While shopping for a new tractor, viewing photographs of several possible models	S	2.863	0.81825
17) Read and study a text book for information	S	2.827	0.80824
18) Determine which new cattle breed to buy by reading information about them online	G	2.817	0.68954

19) Read a pamphlet to obtain instructions on how to calibrate a sprayer	S	2.808	0.66528
20) Read and study trade publications and technical journals	G	2.716	0.69105
21) Listen to an audio tape on a specific topic	I	2.697	0.77064
22) Watch a demonstration in a classroom	S	2.692	0.83388
23) Participate in a seminar sponsored by an agribusiness where ideas are exchanged	G	2.680	0.68508
24) Participate in a community college credit class where discussion is encouraged	G	2.629	0.72796
25) Attend a series of in-depth meetings on a specific topic presented by lecture only	S	2.555	0.75528
26) Attend a round table discussion where I listen to farmer's discussion	S	2.551	0.74461
27) Attend a series of meetings with information on a screen with Power Point presentation	G	2.537	0.75313
28) Attend a speech on a specific topic presented by an expert	S	2.524	0.6897
29) Attend a meeting by a farm organization where charts and graphs are used	S	2.439	0.74928
30) Listen to a panel talking on a specific agricultural topic	S	2.236	0.71839

### Summary

A within subjects ANOVA was conducted to test whether there were significant differences between the preferences of Georgia Young Farmer participants with three learning styles that were transformed into three individual subgroups. The results indicated that there was a significant difference within the three learning styles. Therefore, the differences were examined and it was found that the learning preference means ranked highest for kinesthetic learning styles, with auditory and visual ranking second and third respectfully. Survey questions were ranked by mean and standard deviation for the total study as well as for each individual construct to help program planners understand more specifically Georgia Young Farmers preferences for learning.

Next, questions 2, 3 and 4 were analyzed using a multivariate analysis of variance

(MANOVA) to examine the association between learning preferences and three independent variables.

No significant differences were found for gender, age level or employment between the dependent variables of visual, auditory or kinesthetic learning preferences.

When the results were analyzed during the Georgia Young Farmer participants, each one of the question responses were assigned a number on a 4 point scale with 1=very ineffective 2=ineffective 3=effective and 4=very effective. A mean was calculated for each individual question and the questions were ranked from largest mean to smallest. From this grouping another construct surfaced. It appeared that not only was there a significant difference in preferred learning styles, but that there could be a significant difference between the types of educational settings. The questions were further evaluated for construct, face and content validity and grouped into three categories: individualized instruction, self- instruction and group instruction. A decision was made to include the Georgia Master Cattlemen data and the Georgia Young Farmer participants.

The additional findings suggests that the mean for questions relating to one to one instruction was greatest, followed by group instruction and self-instruction.

## Chapter 5

Findings and Conclusions, Discussion, Implications and Recommendations for Future Research

Chapter 1 addressed the statement of the problem, the purpose of the study, the significance of the study, the research questions, the hypothesis, the limitations and the assumptions of the study, and the definition of terms. Chapter 2 reviewed the literature which considered Adult Agriculture as a Part of Secondary Education, Program Planning in Adult Agriculture Education, Adults as Learners Age, and Gender and Employment.

Chapter 3 reiterated the purpose of the study and the research questions. Further, this chapter addressed the setting and participants, the procedures and the methods used for developing the instrument. The chapter concluded with a discussion of the reliability and validity and an explanation of the analysis of data.

Chapter 4 focuses on the test of the hypothesis, and the results of the data found regarding Georgia Young Farmer participants learning style preferences.

Chapter 5 provided the findings and conclusions, discussion, implications and recommendations for future research.

### Purpose of the Study

The purpose of the study was to acquire information about Georgia Young Farmer participant learning style preferences in relation to visual learning, auditory learning and kinesthetic learning. An instrument was developed by the researcher and was used to measure the learning style preferences. The idea for the instrument was developed by the researcher after reviewing the study “Assessing the Learning Styles of Iowa Farmers” by Larry D. Trede and Kevin S. Miller (Trede & Miller, 2000). The questions that were in the Trede and Miller study’s questionnaire were used as a guide. Much of the research in this study is related to

development of the instrument. There were 26 questions in the Trede & Miller study. A new instrument was developed with 30 questions that divided into three constructs for visual learning preferences, auditory learning preferences and kinesthetic learning preferences. . After questions were added and edited to expand examples related to agriculture, and learning styles related to visual, auditory and kinesthetic, it was reviewed by a panel of experts including the dissertation committee. Next, a pilot assessment was given at the Chattooga County Young Farmers meeting in the early Fall of 2012. It was decided with the approval of the Committee to change the instrument to a 4 point Likert scale and to modify the instrument to contain responses with boxes. A large number of respondents failed to check for gender, so the gender portion of the instrument was redesigned.

### Research Questions

The study is an attempt to answer the following research questions:

1. Do Young Farmer adult participant's preferred learning methods for visual, auditory and kinesthetic differ?
2. Do Young Farmer adult participant's preferred learning methods differ between gender and their preferred learning styles?
3. Do Young Farmer adult participant's preferred learning methods differ between age range and their preferred learning styles?
4. Do Young Farmer adult participant's preferred learning methods differ between occupation and their preferred learning styles?

## Design

A within-subjects ANOVA was conducted in a pilot study to check for reliability and further to test a newly written survey instrument. In addition, there were reasons to believe that significant differences between the learning preferences of Farmers participating in the Georgia Master Cattlemen certification program would indicate validity of the instrument if similar results could be replicated in a larger study. Even though the population was small ( $n=50$ ), the pilot study indicated learning preference differences. These differences pointed to a preference for kinesthetic learning. However, when a between subjects ANOVA was administered for gender, age level and employment there were no significant differences. The pilot study showed that further study of the Georgia Young Farmer participants would be merited.

A great deal of the study was driven by development of a new survey instrument. The instrument was first field tested at a Chattooga County Young Farmers meeting. The result of this test shed light on format problems and responses to questions seemed to be skewed to the middle. The questionnaire was revised and formatted differently. In addition, the Likert style responses were changed to four responses. The Master Cattlemen's data from the instrument was analyzed for reliability, Cronbach's Coefficient Alpha was lower for kinesthetic learning preference questions, it was decided to review the questions, make edits for clarity and give the test with expectations that reliability would increase with a larger sample size.

While the pilot study population was only 50, results indicated a need for further study of Georgia Young Farmer participants with a much larger population

When the Georgia Young Farmer participant's data was analyzed, the instrument was found to be reliable.

Descriptive statistics attained showed learning preference means ranked highest for kinesthetic learning styles, with auditory and visual ranking second and third respectively.

Using a mixed design ANOVA, no significant differences were found for the independent variables of gender, age-level or employment with the dependent variables of visual learning preference, auditory learning preference and kinesthetic learning preference.

The first independent variable analyzed in relationship to preferred learning was gender. A multivariate analysis of variance (MANOVA) was used to examine the association between learning preferences. Gender served as the independent variable, and visual, auditory and kinesthetic learning preferences as the dependent variables, the interaction between gender and learning preferences were not significant.

The second independent variable analyzed in relationship to preferred learning was age level. A multivariate analysis of variance (MANOVA) was used to examine the association between learning preferences. Age level served as the independent variable, and visual, auditory and kinesthetic learning preferences as the dependent variables, the interaction between age level and learning preferences were not significant.

The third independent variable analyzed in relationship to preferred learning was employment. A multivariate analysis of variance (MANOVA) was used to examine the association between learning preferences. Age level served as the independent variable, and visual, auditory and kinesthetic learning preferences as the dependent variables, the interaction between employment and learning preferences were not significant.

While analyzing the data, questions were ranked by mean and it became obvious that there was a similarity among the preference questions. It appeared that questions relating to one on one instruction ranked higher regardless of the learning styles content of the question. There

also appeared to be two other constructs emerging from the questionnaire relating to group instruction and self-instruction. These questions were sent to a team of experts for review of validity and tests for reliability indicated strong reliability for each of these constructs. Further analysis using a repeated measures within Analysis of Variance (ANOVA) indicated a significant difference between the three computed variables for educational settings.

### Findings and Conclusions

This study investigated the difference in learning preference between three subgroups of learning preferences among Georgia Young Farmer participants. The study's instrument was developed from research of other adult farmer learning studies by the researcher. A pilot study was used to correct any obvious problems with the survey instrument and to determine for external validity purposes how well the study replicates agricultural learners preferences. It was field tested and revised at the Chattooga County Young Farmer meeting and was later given to 50 participants in the Georgia Master Cattleman's certification program at Calhoun Georgia.

The findings of this study indicate the following:

1. For Georgia Young Farmer participants in this study there is a significant difference in their preferred learning styles.
2. In addition, those preferences are strongest for kinesthetic learning, with auditory and visual ranked by means as the second and third preference for learning.
3. There was no significant learning preference differences associated with gender, age level or employment.
4. Adult learners participating in Master Cattleman certification and Georgia Young Farmer participants prefer instruction that is individualized.

## Discussion

The review of literature discussed in Chapter 2 established that farmers tend to prefer learning that is practical and purpose oriented. Farmers tend to be more hands on in life as well as learning. However, like any portion of the population, Young Farmer participants tend to find merit in many types of learning and settings. These results were consistent with the results in this study conducted on Georgia Young Farmer participants. From the study, an accidental group of constructs seem to surface and were identified as individualized learning, group learning and self-instructed learning. When the interaction of gender, age and employment was considered it was found that participants were concerned with the setting for the instruction as much as the type of instruction.

The expectation was for the Georgia Young Farmer participants to lean toward kinesthetic learning in their preferences. This was the case in this study. However, there was less difference between their responses for auditory versus visual learning with auditory being slightly greater. In addition, there was a greater mean for individualized learning and surprisingly group learning was slightly greater than self-instruction learning. This all stands to reason that Georgia Young Farmer participants in this study would prefer to be taught by a hands on method with one on one instruction for learning of great importance. The study seems also to indicate that preferences for learning are not significantly different for participants of different gender, age or employment. This could be because the study was of a small specific group of individuals with similar interests and backgrounds

## Implications

The results of this study indicated that Georgia young farmer participants are hands-on learners as a group. Individually, though it is important to note that there is a preference for all types of learning styles, especially as it relates to the setting of the instruction. Not all learners learn the same way and all three learning styles and settings should be incorporated into the program planning of Georgia Young Farmer participants.

There was not a significant difference between gender, age level of employment, so it was quite clear that across age and gender these Georgia Young Farmer participants were similar in their preferences.

While it is difficult in many situations to incorporate hands on learning into Young Farmer educational programs, it seems necessary for teachers to make efforts to this end. In addition, educational classes and farm visits should be centered around hands on activity and one on one instruction as often as possible. The teacher should look to use all three types of learning, but never discount the power of hands on learning with individual teaching.

Even though no significant differences were found in this study between gender, age-level or employment, there are differences in individual and mean scores would indicate that there is merit in all of the preferred learning styles.

## Recommendations for Future Research

With additional constructs emerging in this study, further studies should examine how learning settings could impact outcomes for Georgia Young Farmers.

If no significant differences occur between gender, age or employment, then studies might be helpful to determine if specific information is more important among these variables,

regardless of the learning preferences. Do females prefer different topics than males?

The constructs described show a definite ranking with kinesthetic (3.13), followed by auditory (2.82) and finally visual (2.70). However, more research could examine what are the combined preferences for these constructs.

It is quite possible that individual Georgia Young Farmers would be categorized with preferences for multiple learning styles, if studied.

In agricultural education settings, participants may or may not be full time farmers. They likely have differing educational areas and different technological backgrounds. Who is to say that farmers learn differently as a group than any other group of adults? This should be the topic of yet more research.

Research suggests that adults attend educational programs for a variety of reasons. Therefore, more study should be conducted to determine the reason for Georgia Young Farmer program attendance with results providing insight as how programs should be administered.

#### Recommendations for Practice

Georgia Young Farmer teachers are expected to provide agricultural educational experiences for adults. This research project would suggest some specific models for implementing those programs.

1. Design programs that incorporate all three styles of learning (visual, auditory and kinesthetic).
2. Place emphasis on arranging programs that include hands-on activity.
3. Organize home visits around a working model.
4. Provide opportunities for farmers to share individually and in small groups.
5. Offer surveys to determine preferred learning activities in addition to preferred topics.

6. Approach participants about organizing tours that include activities with specialists or experienced farmers.
7. Avoid classroom lectures unless absolutely necessary.

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## Appendix 1

Sunday, October 21, 2012 8:43 PM

You replied on 10/23/2012 6:59 PM.

Dear Barry

Thank you for seeking permission to use VARK. We rely on the honesty of people to act in a professional way when using our copyright and trademarked materials. Many don't know that trainers, businesses, government agencies and professional sports groups must be licensed to use them. VARK is free only for use in universities, colleges and high schools and is not available free for trainers or consultants working in those environments. ***You may not place VARK copyright materials on any website or intranet.***

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We can gather your data for you. Our VARK Subscription Service does not need any installation on your system. We capture the VARK scores for your class or classes or for your whole institution. You manage the site and have access to the analyzed results that can be downloaded for your use. The Subscription Service is demonstrated on our website. The cost for six months is approximately \$US95.

Also available is a "pinged" profile that can be accessed after completing the VARK questionnaire. You or your students will immediately receive, on their browser a PDF file customized to their VARK scores with study strategies as well (Help sheets).

If you are using VARK for research, please note that we have two scoring systems and one is designed specifically for research. The Research spreadsheet is based on standard deviations and is available on application. Provide an explanation of your research and also undertake to provide a copy of your finished paper. The spreadsheet uses a different algorithm from the online version. You should also read our research page for advice about using VARK for research to avoid some of the common errors that researchers make. The advice is at these addresses:

<http://www.vark-learn.com/english/page.asp?p=whatsnew>  
[www.vark-learn.com/english/page.asp?p=advice](http://www.vark-learn.com/english/page.asp?p=advice)

Appendix 2

Georgia Young Farmer Preferred Method of Instruction Survey: <i>Info will be used to help farm programs</i>		Thank	You!!!	
<b>Place one X for each question--based on your opinion of each of these learning methods</b>	<b>Very Ineffective</b>	<b>Ineffective</b>	<b>Effective</b>	<b>Very Effective</b>
1) Complete a hands-on task while an instructor gives help or information				
2) Exchanging ideas in a meeting sponsored by a local farmer organization				
3) Assembling new equipment on my own				
4) Attend a speech on a specific topic presented by an expert				
5) Attend a series of in-depth meetings on a specific topic presented by lecture only				
6) Watch an educational video tape				
7) Attend a series of meetings with information on a screen with Power Point presentation				
8) Spend a day "on-the-job" training with an experienced farmer				
9) Read and study a text book				
10) Attend a meeting by a farm organization where charts and graphs are used				
11) Watch a demonstration in a classroom				
12) Repair something on my own				
13) Listen to a panel talking on a specific agricultural topic				
14) Attend a workshop where participants complete hands on task				
15) Participate in a community college credit class where discussion is encouraged				
16) Read and study trade publications and technical journals				
17) Listen to an audio tape on a specific topic				
18) Attempt a new skill on my farm through trial and error				
19) Have a consultant that shows me how to perform a task				
20) Participate in a seminar sponsored by an agribusiness where ideas are exchanged				
21) Attend a farming organization workshop where time is given for discussion				

22) Take a trade course which emphasizes doing projects				
23) Have an agent or teacher one-on one make a home visit to train me in a task				
24) Question other farmers about their success				
25) Attend a round table discussion where I listen to farmer's discussion				
26) Read a pamphlet to obtain instructions on how to calibrate a sprayer				
27) Determine which new cattle breed to buy by reading information about them online				
28) Attend field days, tours of farms where hands on tasks are completed by attendees				
29) While shopping for a new tractor, viewing photographs of several possible models				
30) Work on my tractor after reading instructions in the owner's manual				

**B. General Information: Place an X by your age range, gender, farm employment, and type of farming:**

1. Age:                      2. Gender:                      3. Farm Employment:                      4.

(Mark all that Apply):

**Crops**

- (20-27 years old)                       Male  
 (28-35 years old)                       Female  
 (36-42 years old)  
 (43-49 years old)  
 (50 or older)

- Full Time Farmer  
 Part Time Farmer  
 Agricultural Professional  
 Non Farmer or Ag Professional

**Crops:**

- Cattle  
 Swine  
 Horses  
 Sheep or Goats  
 Contract Poultry  
 Row Crops  
 Greenhouse or Nursery  
 Vegetables

**AUBURN UNIVERSITY INSTITUTIONAL REVIEW BOARD for RESEARCH INVOLVING HUMAN SUBJECTS  
RESEARCH PROTOCOL REVIEW FORM**

For Information or help contact **THE OFFICE OF RESEARCH COMPLIANCE**, 115 Ramsay Hall, Auburn University  
Phone: 334-844-5966 e-mail: hsubjec@auburn.edu Web Address: <http://www.auburn.edu/research/vpr/ohs/>

Revised 03.26.11 – **DO NOT STAPLE, CLIP TOGETHER ONLY.**

Save a Copy

1. PROPOSED START DATE of STUDY: Aug 31, 2012

PROPOSED REVIEW CATEGORY (Check one):      **FULL BOARD**      **EXPEDITED**       **EXEMPT**

2. PROJECT TITLE: Preferred Learning Preferences of Georgia Young Farmer Participants

3. Barry Scott Bailey      PhD Candidate      Career/Tech Ed      256 523 1468      bsb0011@tigermail.auburn.edu  
**PRINCIPAL INVESTIGATOR**      **TITLE**      **DEPT**      **PHONE**      **AU E-MAIL**

245 County Road 53 Cedar Bluff, Alabama 35959      bbailey@chattooga.k12.ga.us  
**MAILING ADDRESS**      **FAX**      **ALTERNATE E-MAIL**

4. SOURCE OF FUNDING SUPPORT:  Not Applicable     Internal     External Agency: \_\_\_\_\_     Pending     Received

5. LIST ANY CONTRACTORS, SUB-CONTRACTORS, OTHER ENTITIES OR IRBs ASSOCIATED WITH THIS PROJECT:

None

6. GENERAL RESEARCH PROJECT CHARACTERISTICS

<p align="center"><b>6A. Mandatory CITI Training</b></p> <p><b>Names of key personnel who have completed CITI:</b> Barry Scott Bailey ✓ <u>Brian Parr</u> ✓</p> <hr/> <p align="center"><b>CITI group completed for this study:</b> <input checked="" type="checkbox"/> Social/Behavioral    <input type="checkbox"/> Biomedical</p> <p align="center"><b>PLEASE ATTACH TO HARD COPY ALL CITI CERTIFICATES FOR EACH KEY PERSONNEL</b></p>	<p align="center"><b>6B. Research Methodology</b></p> <p><b>Please check all descriptors that best apply to the research methodology.</b></p> <p>Data Source(s):    <input checked="" type="checkbox"/> New Data      Existing Data</p> <p>Will recorded data directly or indirectly identify participants? Yes      <input checked="" type="checkbox"/> No</p> <p>Data collection will involve the use of:</p> <p>Educational Tests (cognitive diagnostic, aptitude, etc.) Interview / Observation Physical / Physiological Measures or Specimens (see Section 6E.) <input checked="" type="checkbox"/> Surveys / Questionnaires Internet / Electronic Audio / Video / Photos Private records or files</p>
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The Auburn University Institutional Review Board has approved this document for use from 10/27/12 to 10/26/15  
Protocol # 12-334 EX 1210

<p align="center"><b>6C. Participant Information</b></p> <p><b>Please check all descriptors that apply to the participant population.</b> <input checked="" type="checkbox"/> Males    <input checked="" type="checkbox"/> Females    AU students</p> <p><b>Vulnerable Populations</b> <input type="checkbox"/> Pregnant Women/Fetuses    <input type="checkbox"/> Prisoners <input type="checkbox"/> Children and/or Adolescents (under age 19 in AL)</p> <p><b>Persons with:</b> <input type="checkbox"/> Economic Disadvantages    <input type="checkbox"/> Physical Disabilities <input type="checkbox"/> Educational Disadvantages    <input type="checkbox"/> Intellectual Disabilities</p> <p><b>Do you plan to compensate your participants?</b>    <input type="checkbox"/> Yes    <input checked="" type="checkbox"/> No</p>	<p align="center"><b>6D. Risks to Participants</b></p> <p><b>Please identify all risks that participants might encounter in this research.</b></p> <table border="0"> <tr> <td><input type="checkbox"/> Breach of Confidentiality*</td> <td><input type="checkbox"/> Coercion</td> </tr> <tr> <td><input type="checkbox"/> Deception</td> <td><input type="checkbox"/> Physical</td> </tr> <tr> <td><input type="checkbox"/> Psychological</td> <td><input type="checkbox"/> Social</td> </tr> <tr> <td><input checked="" type="checkbox"/> None</td> <td><input type="checkbox"/> Other</td> </tr> </table> <p>*Note that if the investigator is using or accessing confidential or identifiable data, breach of confidentiality is always a risk.</p>	<input type="checkbox"/> Breach of Confidentiality*	<input type="checkbox"/> Coercion	<input type="checkbox"/> Deception	<input type="checkbox"/> Physical	<input type="checkbox"/> Psychological	<input type="checkbox"/> Social	<input checked="" type="checkbox"/> None	<input type="checkbox"/> Other
<input type="checkbox"/> Breach of Confidentiality*	<input type="checkbox"/> Coercion								
<input type="checkbox"/> Deception	<input type="checkbox"/> Physical								
<input type="checkbox"/> Psychological	<input type="checkbox"/> Social								
<input checked="" type="checkbox"/> None	<input type="checkbox"/> Other								

**Received**  
**OCT 05 2012**  
Research Compliance

Do you need IBC Approval for this study?     No     Yes - BUA # \_\_\_\_\_    Expiration date \_\_\_\_\_

**FOR OHSR OFFICE USE ONLY**

DATE RECEIVED IN OHSR: <u>10/5/12</u> by <u>UB</u>	PROTOCOL # <u>12-334 EX 1210</u>
DATE OF IRB REVIEW: <u>10/27/12</u> by <u>CC</u>	APPROVAL CATEGORY: <u>45CFR 46.101(b)</u>
DATE OF IRB APPROVAL: _____ by _____	INTERVAL FOR CONTINUING REVIEW: <u>3 years</u>
COMMENTS: <u>no revisions</u>	



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

INFORMED CONSENT

for a Research Study entitled

“Preferred Learning Styles of Georgia Young Farmer Participants”



You are invited to participate in a research study to determine the preferred learning styles of farmers. The study is being conducted by Barry Bailey-AU Graduate student, under the direction of Dr. Brian Parr, in the Auburn University Department of Agriscience Education/Curriculum & Teaching. You were selected as a possible participant because you are a member of the Georgia Agriculture community and are age 19 or older.

If you decide to participate in this research study, you will be asked to complete a questionnaire survey relating to preferred learning styles. Your total time commitment will be approximately 15 minutes.

There are no identifiable risks associated with participating in this study. To minimize any possible risks, you will not be asked for any identifying information linking your responses to you individually.

If you participate in this study, you can expect to be a part of a study that will benefit agricultural program planning in the state of Georgia. I cannot promise you that you will receive any or all of the benefits described.

If you change your mind about participating, you can withdraw at any time during the study. Your participation is completely voluntary. If you choose to withdraw, your data can be withdrawn as long as it is identifiable. Your decision about whether or not to participate or to stop participating will not jeopardize your future relations with Auburn University or the Department of Agriscience Education.

Participant's initials \_\_\_\_\_

Page 1 of 2

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334-844-4434

FAX:  
334-844-6789



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Your privacy will be protected. Any information obtained in connection with this study will remain anonymous. Information obtained through your participation may be used to complete a dissertation and published in professional journals.

If you have questions about this study, please ask them now or contact Barry Bailey at baileysbluegrass@tds.net. A copy of this document will be given to you to keep.

If you have questions about your rights as a research participant, you may contact the Auburn University Office of Human Subjects Research or the Institutional Review Board by phone (334)-844-5966 or e-mail at hsubjec@auburn.edu or IRBChair@auburn.edu.

HAVING READ THE INFORMATION PROVIDED, YOU MUST DECIDE WHETHER OR NOT YOU WISH TO PARTICIPATE IN THIS RESEARCH STUDY. YOUR SIGNATURE INDICATES YOUR WILLINGNESS TO PARTICIPATE.

Participant's signature \_\_\_\_\_ Date \_\_\_\_\_ Investigator obtaining consent \_\_\_\_\_  
Date \_\_\_\_\_

Printed Name \_\_\_\_\_ Printed Name \_\_\_\_\_

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