INVESTIGATING AGRICULTURE TEACHER PREPAREDNESS TO TEACH GLOBAL ISSUES AFFECTING U.S. AGRICULTURE

by

KATRINA RACHEL SHARP

(Under the Direction of Maria Navarro)

ABSTRACT

The purpose of this study was to determine how interested and prepared secondary agriculture education teachers were to teach their students about global issues affecting U.S. agriculture. A mixed methods approach was used; six recent graduates of an Agriculture Education program were interviewed about how they developed their knowledge of global issues and agriculture, and a questionnaire was developed and administered to agriculture teachers in six Southern States asking about their knowledge and preparation to teach global issues. Results indicate that agriculture teachers are interested in learning more about global issues but feel underprepared to teach about the issues in their classroom. It is recommended that University Agricultural Education programs become more proactive in preparing agriculture teachers to teach about global issues.

INDEX WORDS: global issues, agricultural education, teacher preparedness

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DEDICATION

I would like to dedicate this thesis to God.

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CHAPTER 1

INTRODUCTION AND LITERATURE REVIEW

This document seeks to investigate agriculture teacher preparation to teach about global issues that affect U.S. agriculture. This investigation is composed of two research articles and a practitioner article, which belong to a Master's thesis. In chapter two, the researcher collected qualitative data that served as a needs assessment to better frame the research questions and informed the construction of variables for the quantitative instrument used in chapter four. In chapter three the authors explained the process followed to construct the quantitative instrument used in chapter four using the data collected from the research in chapter two. The results from both research articles were used to draw conclusions and recommendations for the research topic.

Structure of the Thesis

This thesis is composed of an introduction chapter that explains the overall purpose of the research, three chapters that explore different aspects of the research questions, and a conclusion chapter that ties together all aspects of the research questions. The Introduction chapter contains the statement of the problem as a whole, overall research objectives, and a literature review. The next three chapters (2, 3, and 4) are journal articles that focus on both qualitative and quantitative investigations of the research problem.

In an effort to investigate how prepared agriculture teachers are to teach global issues affecting U.S. agriculture, the research in this thesis was conducted using a mixed methods approach. Chapter 2 of the thesis is a qualitative investigation of how pre-service agriculture

teachers construct their knowledge of global issues and how prepared they feel to teach these issues. The purpose of this study was to investigate Agricultural Education pre-service teachers' self-perceived preparedness to help their secondary students' link global issues that affect U.S. agriculture and the role of the University Agricultural Education program in this preparation. It is primarily focused on answering how teachers define global agriculture/global issues that affect U.S. agriculture, and how prepared they perceive themselves to be to teach these issues in their classroom.

The advantage to a mixed methods approach is that information obtained from the first investigation (in this case the qualitative portion) is used to inform the focus and development of a quantitatively focused instrument. In essence, the first investigation acts as a needs assessment prior to beginning the next stage of research. Chapter 3 of the thesis details steps that the researcher progressed through while developing the quantitative instrument and testing its reliability and validity. It is written for a practitioner audience who may use this chapter as a guide to developing and testing their own instruments.

Chapter 4 of the thesis takes a broader look at how interested and prepared agriculture teachers are to teach global issues affecting U.S. agriculture. The purpose of this study was to investigate agriculture teachers' knowledge of and interest in global issues that affect U.S. agriculture and determine what role they think their University Agricultural Education program should have in preparing them. The scope of this section involves agriculture teachers from multiple states in the Southern region of the United States as defined by the American Association for Agricultural Education (AAAE). This chapter also focuses more on the University Agricultural Education program's role in preparing teachers to teach global issues

affecting U.S. agriculture. The final chapter of the thesis provides overall conclusions and recommendations about the data that was found from the investigations.

Introduction

Within the past twenty years, numerous research articles have highlighted the growing importance globalization has had on the agricultural industry and the need for agriculture education to be more internationalized (Moriba, Edwards, Robinson, Cartmell & Henneberry, 2012; Sammons & Martin, 1997; Sharp & Roberts, 2013; Wingenbach, Boyd, Lindner, Dick, Arispe & Haba, 2003). Despite attempts to internationalize the agriculture curriculum at both the collegiate level and the secondary level, students still demonstrate a deficit of knowledge regarding international agriculture (Wingenbach et al., 2003). Recent world events, economic collapses, rising food prices, food borne illnesses, and health concerns underlie how important it is for students studying agriculture to be familiar and prepared to work in a globalized world. It is equally important, if not more, for students studying to become agriculture teachers to be comfortable with such topics. Understanding this, University Colleges of Agriculture (CoAs) have made efforts to internationalize the student experience through study abroad programs, integrating a more international focus in classes, and faculty development.

The National Council for Agricultural Education (NCAE) has noted the importance of a global perspective and has encouraged efforts to internationalize courses. The NCAE represents organizations and entities that are associated with school-based Agricultural Education, and provides leadership and coordination to shape the future of Agricultural Education. The NCAE developed a *Global Strategy Taskforce* to address how to enhance global engagement in United States Agricultural Education. The taskforce established seven key pillars of success to accomplish this objective of global engagement, one of which focused on teacher preparation

(National Council for Agricultural Education [NCAE], 2011). Within the pillar of teacher preparation as proposed by the NCAE, student-teacher preparation is an avenue for investigation as to the best way to prepare both secondary agriculture students and agriculture teachers to be more globally competent. Pre-service training is a critical first step to preparing new teachers to be more globally competent. These teachers in turn can prepare students to enter into a more globalized world.

Rather than develop a separate globalized Agricultural Education curriculum at the secondary level, infusion of global agriculture concepts into the collegiate Agricultural Education curricula may be a more effective method to bring about change at the secondary level. At the conclusion of a study by Balschweid and Thompson (2001) regarding agriculture teachers efforts to integrate science into the agricultural curriculum, the authors suggested that student-teacher preparation can lay the groundwork for infusion efforts and is critical for shortening the time period of integrating new material into the secondary classrooms. In 2009, NCAE prepared the *National Agriculture, Food, and Natural Resources (AFNR) Career Cluster Content Standards* in order to provide a guide in curriculum development for secondary agriculture educators to ensure that teachers were creating well-planned and relevant materials for secondary students in agricultural classes. A report from the NCAE suggest that strategies to increase global engagement should involve integration with AFNR content standards (NCAE, 2009) rather than attempting to create new curriculum standards that emphasize globalized agriculture and would take the place of the current standards. The current approach to globalizing Agricultural Education is to work within the existing structure and integrate global elements, rather than create new curriculum standards. However, for this strategy, or any strategy to internationalize the agriculture curricula, to be effective, one must know the current level of knowledge,

attitudes, interest, and actions towards global issues that affect U.S. agriculture among pre-service teachers and current agriculture teachers.

Agriculture teachers should be targeted as the initial focus of the global engagement strategy because they have the ability to influence students. The NCAE (2009) reports that developing a global mindset for agriculture teachers is a top priority for the agriculture industry, in order for future agriculture students to be globally aware and competent to work. However, the first step to accomplishing this goal is to determine how teachers develop a global mindset and what role the University Departments of Agricultural Education should play in this development.

Statement of the Problem

Research has underscored the importance of preparing agriculture students to be able to work in a globalized world, but efforts to prepare students have fallen short, particularly within the Agricultural Education sector (Irani, Place & Friedel, 2006). There are still unanswered questions about how agriculture teachers construct knowledge of global agriculture and therefore develop a global competence and how prepared they are to teach it to their secondary agriculture students. This study sought to answer questions pertaining to agriculture teachers perceptions of their preparedness to teach global issues and the role their University Agricultural Education programs had in this preparation.

Purpose and Objective of the Study

The purpose of this study was to describe agriculture education teachers' self-perceived preparedness to teach about global issues that affect U.S. agriculture and the role their University Agricultural Education Program should play in this preparation. The research questions that guided this study were:

1. How do pre-service agriculture teachers construct their knowledge of global agriculture?
2. How interested and prepared are Agricultural Education teachers to help their students understand global issues affecting U.S. agriculture?
3. How much responsibility should the University Agricultural Education programs have in preparing agriculture teachers to teach their students about global issues affecting U.S. agriculture?
4. How much influence do University Agricultural Education programs have on agriculture teachers' development?

Literature Review

Defining Internationalization of the College Curriculum

Colleges of Agriculture (CoAs) have faced the challenge of having to internationalize their curriculum in order to prepare their students to work in a more globalized world (Brooks, Frick & Bruening, 2006). As with most buzzwords though, the ambiguity of the terms "internationalization" and "globalization" leave room for interpretation and get translated in a variety of ways. According to Navarro and Edwards (2008) there is a lack of understanding among faculty in CoAs regarding the meaning of internationalization which underscores the importance of developing a working definition of internationalization in order to keep the objective consistent. While often used interchangeably, globalization and internationalization are different phenomena, but typically internationalization is precipitated by globalization.

According to Knight (2004), globalization is the exchange of information, technology, knowledge, people and values between nations and across borders. Globalization encompasses a worldwide scope and is not limited by geographic, political, economic, or cultural beliefs. Internationalization on the other hand is defined as "the process of integrating an international,

intercultural, or global dimension into the purpose, functions or delivery of post-secondary education" (Knight, 2003 p. 11 as cited by Knight, 2004). What is key is that internationalization is a *process* that is being carried out by universities in response to the changes that have occurred due to globalization (Navarro & Edwards, 2008).

How internationalization of higher education is interpreted and carried out is a matter of debate and the focus of much research, in part because there are many different directions in which it can be taken. For the purpose of this research, internationalization at the university level is interpreted to mean "the inclusion of an international, intercultural, and/or global dimension into the curriculum and teaching learning process" (Knight, 2004, p. 6). This definition was chosen because it is consistent with current internationalization practices being implemented by CoAs regarding the inclusion of both curriculum and teaching and learning practices.

Necessity for Internationalization at the University Level

The flow of information and ideas that has resulted from the process of globalization has changed American society irrevocably and has left American universities with the responsibility to respond to this change (Sammons & Martin, 1997). The implication of globalization is that the world is increasingly being shaped by interactions between people who do not belong to the same culture nor share the same ideas and beliefs. An increasing amount of regional, international and cultural conflicts, along with an increasingly mobile labor force, have resulted in a world where cultural competence and a familiarity with diversity are crucial for professionals to succeed (Knight, 2004).

Due to the challenges and complexities of the global environment, for the next generation of global leaders, workers, and businesses people to be successful, there needs to be a change in

cognitive thinking and adoption of new perspectives that are more globally mindful (Osland, Bird & Mendenhall, 2012). In addition, navigation of the global environment requires workers to have necessary skills such as leadership, communication, and interpersonal skills termed 'soft skills'. According to Knight (2004) human capital is increasingly being recognized as an important asset for companies, and universities are being recognized as a means to educate and enhance students' ability to perform in the international sphere. This is further supported by Crawford, Lang, Fink, Dalton, & Fielitz (2011) whose study found that CoAs have a shared (with the graduates themselves) responsibility to train graduates in 'soft skills', which are important for the development of a global mindset.

In order to prepare students, universities must focus not just on technical knowledge of agriculture, but the cultural components as well, including global awareness. For students to be better prepared to enter the workforce, they must have both an understanding of global agriculture and a global perspective to apply, translate or transfer that knowledge (Wingenbach et al., 2003). Increased global awareness can come about through adequate internationalization of the curriculum (Moriba et al., 2012). It is critical that universities continue their efforts to adapt to a more global world (Knight, 2004).

Elements of Internationalization at the CoAs Level

Internationalization is a process with many elements needing to work in conjunction to be successful. The process of internationalization is an on-going effort and is constantly evolving. As Wingenbach et al. (2003) stated "the internationalization of a curriculum must be more than a document; it must take life in the form of active participation and attitude change toward international agricultural issues" (p. 34). This active participation should take a holistic approach, and involve all levels of CoAs, in order to provide future agriculture teachers the

experience and knowledge to teach their students about global issues affecting U.S. agriculture. It should be stressed that internationalization should be achieved through an integration process and not take the form of a separate discipline that needs to be adopted by all; otherwise faculty resistance may occur (Navarro & Edwards, 2008).

Internationalization of CoAs requires three components to be successful; programs that are embedded with a global education, faculty that understand and support global education, and student awareness of international agriculture. Global education is seen as a way to provide knowledge to students that allow them to see the connections between themselves and the issues that are occurring around the world (Yang, 2010). The linchpin of global education is the ability to show students the connections between global and local in order to make it relevant. However, these connections may be dependent on the level of awareness of global events and their implications for U.S. agriculture (Wingenbach et al, 2003). Faculty support of internationalization and their knowledge of global issues are essential in order to articulate these connections and establish change (Gilliom, 1993).

There are two main methods proposed for internationalizing CoAs: infusion and integration (Yang, 2010). Infusion involves incorporating stand-alone elements of global education throughout the curriculum without any radical changes to the curriculum itself (Pike & Selby, 2000). Integration on the other hand is more transferable to real-world issues because it views the system as a whole and seeks the connections and relationships between world phenomena (Pike & Selby, 2000). CoAs faculty members are leery of integration of the global elements in part because it is perceived as competing for their time in a curriculum that is already overloaded (Navarro & Edwards, 2008). Infusion is the easier method to adopt since it does not involve curriculum overhaul, but there is the danger of the global elements being "lost" among

the other knowledge and connections between the two being vague. Establishing connections between global elements and "real life" is critical because, according to social constructivists, students construct their knowledge based on their interactions and connect that knowledge to their previously held beliefs and ideas. CoAs should adopt an internationalization method that clearly demonstrates the link between global agriculture and local/national events, otherwise pre-service teachers will be unable demonstrate to their students the connection between the two.

Pre-Service Teachers' Development

Students entering into an Agricultural Education program already come with preconceived notions about teaching and the world based on their life experiences. According to Gowne and Ramdass (2012) teacher education programs can help students shift their attitudes over the period of four years. These prior beliefs and shift in thinking highlight that pre-service teachers construct knowledge outside of the teacher education program, but the teacher program can also influence student beliefs depending on the experience. Ozgun-Koca and Sen (2006) state that pre-service teachers' experience within the classroom can impact how they choose to teach, and that they can end up adopting their program's philosophy as their own. The strong influence that the teacher program can have in shaping teacher development should not be ignored. Not only do university teaching programs influence beliefs and teaching styles of pre-service teachers, but they also can influence the confidence level that teachers have about the subject material (Cahill & Skamp, 2003). It is necessary to explore the link between the university teacher education program and the practices of current agriculture teachers regarding international issues affecting U.S. agriculture.

Theoretical Framework: Social Constructionism

Proponents of social constructionism believe that people's knowledge is formed based on social interactions with their environment. As individuals interact with their environment and negotiate with social groups they acquire knowledge and use that knowledge to form schemas of information that influence how they perceive the world (Lock & Strong, 2010). Social constructionism is similar to the constructivist theoretical framework in that they both propose that people's perception and interpretation of the world is constructed (Young & Collins, 2009). However, constructivism focuses on individual construction using cognitive processes, whereas social constructionism focuses on the interactions and social processes (Young & Collin, 2004). Social constructionism is more relevant to this research project than constructivism in part because globalization also occurs due to interactions with people's (global) environment. Norms develop when people interact with each other and the environment, and these interactions begin to shape the perceptions of people (Andrews, 2012). This environment could also include the teacher education program environment and their interactions with faculty within this environment.

As pre-service teachers go through their Agricultural Education program they are introduced to a new environment where they are confronted with new ideas and interact with different people. These people include both fellow students and faculty. As a result, pre-service teachers are constantly constructing and de-constructing knowledge as they go through their teacher education program, resulting in a change in thinking about subjects and teaching practices (Sutton, Cafarelli, Lund, Schurdell & Bichsel, 1996). Understanding how pre-service agriculture teachers construct their knowledge of global issues within their schema can help

identify which social interactions have the biggest impact on creating norms and can help create change to an existing schema.

Methodological Framework: Mixed Methods

Research has been recognized as being conducted in order to solve problems and find solutions. However as Miller (2006) points out, research that is conducted for the purpose of understanding can move the discipline closer to finding a solution to a problem, without actually proposing a solution to the problem itself. Understanding how agriculture teachers construct their knowledge of global issues affecting U.S. agriculture will not provide a specific solution to the internationalization of the curriculum, but has the potential to give more depth to the literature surrounding this issue. In fact, according to Miller (2006) problem setting rather than problem solving can result in systematic change, because it delves deeper into understanding the issue. A combination of qualitative and quantitative data were collected (mixed methods) in order to gain a better understanding of how teachers perceive internationalization of the curricula. Comparing the findings from these two methods will help the researcher better understand the variables influencing teachers' perceptions about global issues that affect U.S. agriculture.

To understand a social phenomenon, one must understand the various dimensions of the phenomenon. There are many variables that can have confounding effects in research; however combining qualitative and quantitative data collection strategies is one technique that is effective in describing linkages among variables (Moriba et. al, 2012). The mixed methods approach provides multiple areas of evidence, which is an effective way to increase validity in a study (Newman, Lim & Pineda, 2013). Generally, qualitative research has been the method used to gain understanding and guide practices (Dooley, 2007). Qualitative methods are used to gain a better understanding of an issue often when little previous information exists (exploratory) and

can later be used to inform the construction of the quantitative instrument. Content validity is established using qualitative method to construct a quantitative instrument, because the researcher is able to align questions used in the quantitative research, with the theoretical constructs (Newman, Lim, & Pineda, 2013).

CHAPTER 2

A QUALITATIVE INVESTIGATION OF AGRICULTURAL TEACHER'S PREPARATION TO HELP STUDENTS UNDERSTAND GLOBAL ISSUES AFFECTING U.S. AGRICULTURE[1]

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Abstract

Internationalizing curriculum has become a topic impacting the secondary and collegiate education system. Teaching about the influence of global issues on U.S. agriculture has become a topic of importance for Colleges of Agriculture. Agriculture teachers at the secondary level play an important role in preparing students to have a better understanding of how global issues affect U.S. agriculture. However, little research has been conducted on how these secondary teachers develop a global mindset. This study was a qualitative study using a social constructionism theoretical framework. Six recent university graduates from an Agricultural Education program participated in semi-structured interviews to determine how they developed their knowledge of global issues and how prepared they felt to teach these issues in a secondary agriculture classroom. Findings suggested that pre-service teachers have a basic understanding of global issues, but lack opportunities to develop a more in-depth understanding. The pre-service teachers believed it was important to teach their students about global issues, but their current level of knowledge on the topics was insufficient. In addition, the University Agricultural Education program's efforts to internationalize are not effective in preparing its teachers to teach about global issues. It is recommended that efforts be made on the part of Agricultural Education programs to be more proactive in providing opportunities for students to learn about global agriculture and ensure that those opportunities result in a two-way flow of information. Suggestions to accomplish this include providing class discussions to help university students connect global issues to local agriculture, or create classes that instruct university students on how to incorporate their knowledge of global issues into their teaching.

Introduction

In 2009 the delegates of the National FFA Organization presented a paper titled *"Exploring a Global Engagement Strategy for Agricultural Education"* (as part of the National Council for Agricultural Education [NCAE]) in which they discussed the importance of agriculture students developing a global mindset and being globally competent. Due to the phenomena of globalization, students pursuing a career in agriculture must be prepared to compete effectively in an internationalized workforce if they are not to be at a disadvantage (Zhai & Scheer, 2004). However, students have indicated that they need further instruction about international agricultural topics in order to have a better understanding of the issues surrounding global agriculture (Radhakrishna, Leite, & Domer, 2003). In order to prepare agriculture students, internationalization is a necessary goal for Colleges of Agriculture (CoAs) (Moriba, Edwards, Robinson, Cartmell & Henneberry, 2012).

The NCAE also identified preparing agriculture teachers as key to delivering global Agricultural Education to students (NCAE, 2009). Agriculture classes, being interdisciplinary in nature, are an ideal medium to integrate global issues affecting U.S. agriculture, without having to overhaul the entire curriculum. Balschweid & Thompson (2001) suggested that student-teacher preparation can lay the groundwork for integration efforts. However, before any groundwork can be laid, research first needs to determine how agriculture pre-service teachers develop their knowledge of global agriculture and what role should Agricultural Education programs play in developing their knowledge. Acker (1999) wrote that Agricultural Education as a discipline has been typically narrowly interpreted. If agriculture students are going to be prepared to face the challenges of the 21st century, then the discipline as whole needs to determine more effective strategies to help agriculture students develop a global mindset. One

such suggestion is to focus on investigating how secondary agriculture teachers develop a global mindset, since agriculture teachers play an important role in preparing students to develop a global mindset. University Agricultural Education programs primary responsibility is to train agriculture teachers to help prepare secondary students to work within the agriculture industry, and that includes preparing them to work in a globalized setting. With knowledge of how pre-service teachers develop their knowledge of global agriculture, Agricultural Education programs can more effectively determine methods to assist pre-service teachers in acquiring knowledge of global issues and better prepare them to understand how global issues affect U.S. agriculture.

Literature Review

Internationalization of Agricultural Education

Agricultural Education research has been focusing progressively on the issues surrounding the preparation of students to work in a globalized world. "The passage of the North American Free Trade Agreement (NAFTA) in 1994 brought international agriculture close to home" (Wingenbach, Boyd, Linder, Dick, Arispe & Haba, 2003, p. 26). As a result, it has become increasingly more evident that if U.S. students are going to be able to compete in the globalized agriculture industry, they must be globally competent. Global competence is defined as ""having an open mind while actively seeking to understand cultural norms and expectations of others, leveraging this gained knowledge to interact, communicate and work effectively outside one's environment" (Hunter, White, & Godbey, 2006, p. 279). For students to develop the skills necessary to become globally competent, internationalization of higher education is needed, particularly within the CoAs.

Internationalization is defined as "the process of integrating an international, intercultural, or global dimension into the purpose, functions or delivery of post-secondary

education" (Knight, 2003 p. 11 as cited by Knight, 2004). Sammons & Martin (1997) call for Departments of Agricultural Education to be at the forefront of internationalization of curricula within CoAs due to their experience in developing classroom activities. This should begin with university faculty enhancing international content within their own classes so that pre-service teachers begin to see the connection between global issues and how they affect U.S. agriculture. It is not enough to provide opportunities to develop global mindsets among agriculture students, because students indicate that lack of awareness of international opportunities is a barrier to participation (Sammons & Martin, 1997). Departments of Agricultural Education must actively make an effort to internationalize their curriculum and demonstrate the importance of global agriculture in order to assist in the development of pre-service teachers. Along with building knowledge among pre-service teachers about global issues that affect U.S. agriculture, Departments of Agricultural Education should also make an effort to link the knowledge with the teaching methods and practices, so that agriculture teachers have both knowledge and pedagogy regarding global issues that affect U.S agriculture. As Pike and Selby (2000) mention, "the process of teaching and learning has to be considered as carefully as the content of the curriculum" (p. 14).

Agricultural Education Program Influence

Agricultural Education programs have a strong influence when it comes to shaping the development of teachers. According to Cahill and Scamp (2003) confidence levels of teachers regarding their subject matter is influenced by what is taught within their teacher education program. A study conducted by Wingenbach, White, Degenhart, Pannkuk & Kujawski (2007) also noted that pre-service teachers have a high perceived teaching comfort level for those subjects that they had high perceived knowledge. In addition, teacher education programs can

result in an attitude shift in pre-service teachers as the students go through the program (Gowne & Ramdass, 2012). Students who enter an Agricultural Education program have preconceived impressions about subjects due to their life experiences. However, teacher education programs can influence those ideas and help students build upon their knowledge, particularly regarding global agriculture. What is important is to determine how students shape their knowledge of global agriculture, so that Agricultural Education programs can develop a better understanding on how to approach the topic and help their students understand the connections between global and local agriculture. Furthermore, not only does determining how students shape their knowledge of global agriculture possibly help Agricultural Education programs develop more effective methods of knowledge acquisition of global issues, there is also the possibility of developing more effective methods to transfer the knowledge of global issues into teaching practices that demonstrate the connection between global issues and U.S. agriculture. With an increased self-efficacy, pre-service teachers will more likely internationalize their own agricultural curriculum as practicing teachers.

Theoretical Framework: Social Constructionism

This study was framed using the social constructionism theory. Social constructionism postulates that knowledge and social actions intertwine and are a product of social interactions (Young & Collin, 2004). As people interact with their world, they form schemas in order to help them interpret what they are experiencing, and these schemas are constantly being re-defined as interactions continue. According to Andrews (2012), as people interact with their social world, their social world begins to influence other people, with the result being the creation of norms and habits. For example, pre-service teachers are constantly constructing and de-constructing knowledge as they go through their teacher preparation program, resulting in a change in

thinking about subjects and teaching practices (Sutton, Cafarelli, Lund, Schurdell & Bichsel, 1996).

Using a social constructionism lens allows for the consideration of multiple realities, since it understands that each person chooses to interpret things differently. In that sense, social constructionism is not as concerned with making definitive claims as it is about making convincing arguments (Andrews, 2012). As a theoretical framework, social constructionism is ideal for investigations of problems because it allows for interpretation and multiple viewpoints, which gives a deeper understanding of the issue being explored, when not much is known about the issue. Agricultural Education research focuses on moving towards solutions to problems, not just on prescribing ways to solve problems (Miller, 2006), thus, in Agricultural Education research, understanding a situation from multiple perspectives and contexts could be more important than proposing one-time packaged solutions. The key to moving toward solutions to problems is about understanding the situation, and approaching the issue of pre-service teacher knowledge from a qualitative social constructionism theory provides an opportunity to further the understanding of the topic.

Purpose and Objectives

The purpose of this study was to investigate Agricultural Education pre-service teachers' self-perceived preparedness to help their secondary students' link global issues that affect U.S. agriculture and the role of the University Agricultural Education program in this preparation. The research objectives were the following:

1. Determine what student-teachers define as global issues affecting agriculture.
2. Determine how interested and prepared Agricultural Education student-teachers are to help their students understand global issues affecting agriculture.

3. Determine what student-teachers believe should be the role of the Agricultural Education program in preparing them to address global issues affecting agriculture in the classroom.
4. Determine what student-teachers believe would be the most effective method(s) for the Agricultural Education program to prepare them to help their students understand global issues affecting agriculture.

Methods

Bracketing Interview

The researcher conducted a bracketing interview on May 17, 2012, prior to interviewing the participants. A bracketing interview is a strategy where the researcher is interviewed about his/her topic. According to Roulston (2010), advantages of bracketing interviews include having the participants reflect on the information they are seeking to bring about during their interviews, allowing the researcher to gain empathy about the interview process that he or she will be asking their participants to be involved in, allowing a novice interviewer to practice, and providing the researcher with alternative perspectives regarding his or her topics. The bracketing interview allowed the researcher to identify areas of potential subjectivity, which were reflected in the subjectivity statement (see Appendix A) and assisted in the development of the interview guide (see Appendix C).

Sample and Selection

Participants were selected using a criterion-based sampling method, with the two criteria being that participants must have graduated from the University of Georgia Agricultural Education program and that the students had only graduated within six months of the interviews being conducted. This criterion was established because the study's objective specifically focused on student-teachers who had completed their studies in an Agricultural Education

program to determine where they have formed their knowledge of global issues affecting agriculture. The six month limit was an attempt to mitigate any outside influences, such as continued education teacher trainings or changes to the Agricultural Education program, which could have influenced the results. The University of Georgia's Agricultural Education program (as opposed to another university's) was selected due to its proximity and convenience to the researcher.

Twenty-three students were identified as fitting the criteria based on the Department of Agricultural Leadership, Education, and Communication's roster of recent graduates. The researcher contacted potential participants via e-mail and asked if they were interested in participating in this study. If a participant responded positively, then a time and place was arranged via e-mail to meet with the participant. In total, seven participants responded, although, due to a scheduling error, only six were interviewed during the months of June to September of 2012 generating a response rate of 26%. Two participants were female, four were male, and three were actively teaching at the time of the interviews. No other demographic data was collected about the participants.

Data generation

The researcher conducted six interviews that ranged in time from 25 minutes to 55 minutes. The interviews were conducted in locations that were conducive to interviewing, in that they allowed the interviewee to feel comfortable and mitigated background noise that may have made the recording inaudible (Kvale & Brinkmann, 2009). The researcher used a semi-structured interview guide that was created based on the research objectives and was constructed using guidelines proposed by deMarrais (2004) so that the end result included short questions that asked for specific information, and were open ended. The interview guide was reviewed by two

professors, one in the Department of Agricultural Leadership, Education, and Communication (ALEC), and the other, who teaches qualitative research, in the Department of Lifelong Education, Administration, and Policy at the University of Georgia. Informed consent was obtained prior to beginning the interviews (see Appendix B). All interviews were audio-recorded, and the researcher supplemented the audio-recording with notes in order to assist in the interpretation of the interview. According to Kvale and Brinkmann (2009), transcribing involves multiple decisions during the process of turning audio into visual that can affect the data. The researcher decided prior to the interview to conduct a thematic analysis, so the decision was made during transcribing to remove filler words such as "um" or "like" since they are more relevant for a conversation analysis than thematic analysis.

Limitations

There are several limitations to this study that need to be taken into account. While this was a criterion-based sample, the researcher was only able to interview people who agreed to participate in the study. As a result, it cannot be ignored that the people who participated in this study may have done so because they were particularly interested in the topic and may have had more extreme views than those who chose not participate. In addition, qualitative interviewing typically ranges from 60 to 90 minutes in order to obtain rich contextual data, however, the interviews only ranged from 25-55 minutes. More data could have emerged if the researcher interviewed the participants for a longer time, or probed deeper on some topics. The researcher also did not triangulate all the data. While the researcher did check into statements made about the program and classes, the researcher did not conduct member checks with the participants regarding the conclusions drawn from the analysis.

Analysis and Results

Note: Below is a guide for understanding the references back to the transcript:
(P#: line #) P# refers to participant number, with the number assigned going in chronological order of the interview data. The "(line #)" is where the information can be found in the transcript. Transcripts will not be provided with this report in order to protect the confidentiality of the participants but line numbers are included for internal audit to increase trustworthiness.

Inductive reasoning is a reasoning process that underlies the data analysis approach used to draw conclusions from the interviews. According to Roulston (2010), "inductive analysis is based on the assumption that inferences can be developed by examining empirical data for patterns" (p. 150). The advantage to this approach, as opposed to using deductive analysis, is that it allows for topics that were introduced by the participants to be examined, which might otherwise be excluded if a purely deductive approach was taken. Thematic analysis was used to reduce the data into codes which were then reorganized into themes (Roulston, 2010). The following themes relating to the research questions emerged: (1) constructing a definition of global issues comes from a variety of sources (defining global issues), but university classes can have a huge impact, (2) students are interested in teaching global issues affecting U.S. agriculture but are underprepared with their current level of knowledge and resources (interested to teach but underprepared) and (3) Agricultural Education programs need to be more proactive in their efforts to internationalize the curriculum. These three themes highlight that while pre-service teachers are actively constructing a global mindset, they are hindered by lack of structure in their current pre-service teacher education program to add to their schema.

Theme 1: Defining Global Issues

Prior to asking the participants to identify how global issues affect U.S. agriculture, the researcher wanted to determine what the participants constituted as "global" in order to ensure that researcher was not assuming something different than the participant. All participants indicated that global was worldwide and impacted everyone, including the United States. P3 stated:

"I include the U.S. globally but it will affect not only the U.S. but the entire globe, every other continent and country out there." (P3:55-56).

That the U.S. is involved, when it comes to global was further highlighted by P2's comments when asked to clarify his comment of community when referring to global:

"Global community, that would be a lot of different interactions, through, through different people from all over, I mean obviously through trade interactions…" (P2: 65-66)

After establishing a reference to global, the researcher asked more specifically what would the participant consider to be agriculture in a global context. Participants indicated that they constructed global agriculture as being defined by interactions. Participants 1, 2, 3 and 6 all referenced trade exports and imports (ex. P6: 37-38 "talking to my students about global agriculture and our imports and exports") and how they affected the U.S. (ex. P1: 51-53 "like trade exports. That is what I would think of, kind of first off because I know you say, like the U.S. is in debt to so many countries you kind of figure out how much of that is actually agriculture related). Participants also indicated that global issues that affect U.S. agriculture included: food security, pathogens, GMOs, and agricultural production practices.

The participants constructed their knowledge of global agriculture in a variety of ways, but it appears that outside of a few university classes devoted to global issues affecting

agriculture, most information comes from news (P5: 235 “biggest source I have right now was, is I mean clearly just like the news”) and the Internet (P3:106 “Just reading, on the website some”), which are not viewed as being a primary source for global issues as stated by P2: “So a lot of that stuff I would say it a lot of it is what I have, I guess I haven’t found a direct line” (180-181) when referring to using resources to acquire knowledge about global issues and agriculture. This thought about not finding a direct line was echoed by P3 “I don’t think it is as obvious as it should be” (228). While participants seem to turn to the Internet and media for their information, university classes and professors seem to be the trusted source of information as indicated by the following statement “when I was a student it was my professors. They kept us, you know, kept us up-to-date with what was going on. The Internet does help though, articles and stuff like that” (P4:174-176).

Although participants indicated that they received their information from outside sources rather than from classes, University level efforts at internationalization have also influenced how students acquire knowledge, particularly for pre-service teachers that may not have had any previous exposure to global issues affecting U.S. agriculture. P4 mentioned “I grew up in an extremely small town [chuckle] with narrow minded views and by going to college I actually broadened my horizons by a large amount” (54-56). Another participant, who has a similar background as P4, referenced a class when speaking about acquiring knowledge of global issues and broadening views “think, like one of the biggest things was taking a class at UGA, in Tifton Campus with Dr. _____. It was “Issues in Global Agriculture” was my class and we did it, and we did it with a satellite video chat” (P6:119-120).

Theme 2: Interested to Teach but Underprepared

The participants indicated a strong interest in both learning about global issues that affect U.S. agriculture and felt that it was important that their students were knowledgeable. However, coupled with that interest was an awareness that they still have to continue learning about global agricultural issues and will need to supplement their knowledge outside of what they have learned from their Agricultural Education program to be successful in teaching about global issues. Interest among the participants was strong about acquiring more knowledge about global issues that affect U.S. agriculture as reflected in the statements below:

"But I think that is pretty important. I think that as teachers we need to be continuing to strive for a greater understanding of world agriculture and current issues." (P6: 272-273).

"You know I would love to learn a lot more about global, global agriculture issues." (P3: 134-135)

"So, we, I think we as American Ag teachers, I think it should be our goal to make that connection for our students today. Because I think my generation, so I know the generations that are coming after me even more so, but my generation definitely does not make that connection" (P6: 146-149).

Not only did pre-service teachers indicate that they need to be aware of global issues affecting U.S. agriculture, but they also believe it is important for their students to know as well. P3 noted "Well you know I think there is an importance for students to know about global agriculture because I think it is important that they know" (124-125). The importance of learning about these issues in an agriculture class was reflected in P2's comment "I mean I think there would be a need, from, probably in a basic Ag class for doing a really globally focused agriculture unit" (203-205). While referring to teaching about international agriculture, P4 stated "I would like to. Especially in my basic Ag class." (311).

Pre-services teachers also connect that their knowledge of global issues affecting U.S. agriculture will have a huge impact on how successful their students will be in a globalized agriculture industry. The statement below reflects the role teachers play when it comes to educating their students about global issues:

"I mean I think, like I said they need to know, the kids need to know that it is bigger than that one little space but I guess, it would be a personal thing. Because I mean I wouldn't want somebody going in and teaching a topic and them not really believing it themselves and just teaching to teach. I think they need to at least have some concept themselves and figure out, ok "why do my students need to learn this" because if they don't believe that themselves then why am I teaching it then it won't be beneficial to either one of them" (P1: 225-231).

"So I think that, if there was a way that we could have more of, a better, gain a better understanding of how world issues affect us I think that would be really good. Especially in ^how^ to teach that, and make that connection to our students. But of course at first we have to have that basic knowledge. I think that that is really important" (P6:308-311).

However, there seems to be a concern about the current level of preparedness that pre-service teachers have if they are to teach global issues to their class right now. Most indicate that they would need supplemental research in order to be ready, or are worried about finding the resources needed. This is reflected in the statements below:

"If I had to right now I think that I could do it. I would definitely have to do little bit more research and find out more information in order for me to feel really comfortable but I could do somewhat of a little lesson right now. I wish, like I said I wish I had more materials to go off of. Google wasn't exactly really good resource, especially with agriculture. So, I would definitely like to get more background information, a lot more resources so" (P3:238-242).

"The more research on it, the better I feel. Like right now if somebody asked me to start talking about swine flu with the limited knowledge I have I would be uncomfortable, but, I don't mind doing my own research" (P4: 207-209).

"the issues that I had in class [referring to University global issues class] I feel very prepared but as far as, if somebody just came up and asked me about a specific issue, then I don't know" (P5:270-271)

P6:76-78. I think that my lack of knowledge of current world issues, as far as current agriculture state of other nations and their economy too, I just lack so much knowledge in those areas

When participants were asked how they would teach global issues to their students, most participants indicated that they would do so in the form of an exploratory research project. “The best way that I have found is letting them research it themselves. Give them the broad topic or the broad idea and let them figure it out themselves, let them do research” (P4: 140-141). “I think it is something that I would probably try to incorporate allowing my students to research on their own” (P6:240-241). “I would probably approach it as a light research project” (P5:305). Whether this is because they are not prepared to teach a lesson, whether research is emphasized in their pre-service classes or that they prefer to teach using a research style was not able to be determined from the current interviews.

Pre-service teachers were interested in acquiring more knowledge about global issues affecting U.S. agriculture and believed it was important for their students to have this knowledge as well. However, they also indicated that their current level of preparation is insufficient to effectively teach these topics and that supplemental research would need to be done. This is summed up by P6 who stated “I think in just thinking out loud the last few minutes that it has made me realize how important it is too really ^know^ because I realize just sitting here how little I do know about what is going on right now in the world, especially involving agriculture” (P6: 469-471).

Theme 3: The Agricultural Education program needs to be more proactive in their efforts to internationalize the curriculum

If the University Agriculture Program’s priority is to educate pre-service teachers about global issues, this priority is not being translated to the pre-service teachers as evidence by the statement from P6 who stated:

"probably having someone to really push and motivate me more, to think more about global issues. I think that would be really good. Because I don't feel like we had, we didn't really have a whole lot of push or, trying to think of the word, just didn't have a whole lot of requirement for that. There weren't a whole lot of things harped on about knowing what's going in the world and global agriculture but it is so important" (431-435).

Classroom instruction appears to be lacking in regards to amount of time spent regarding international issues and agriculture taught within both the Agricultural Education classes and the agriculture electives taught within the program's current integration efforts. P3 stated at two separate points in the interview "besides the frequent, or the every now and then popping up issues, other than that I didn't really get a whole lot of global agriculture issues, type things. But that was something I wished I could have learned more cause it is something that is good to know, especially for us. But no, other than that just an infrequent question in classes. Not much" (144-147) and "Not much I can tell you that. If I put it all together it is probably about an hour's worth all together since I have been here" (288-289). P3 comments were echoed by P2 who said "I would probably say the global studies might be more beneficial due to the fact that I can just try to picture that aspect trying to be plugged into some of the existing curriculum, I could see it getting, really getting lost. Could, should it be there, yes but I don't see it doing justice" (469-471).

There are mixed ideas about how the University of Georgia Agricultural Education department should internationalize its curricula. Some participants, such as P5, indicated that a separate class devoted to global issues should be taken. "I think I gained the most from the one that completely devoted to global issues. I think that you don't get the, you go into more depth in that and that you'll find, that you get, I feel like the global stuff may get pushed to the back burner with one that is integrated throughout" (P5: 371-374). P3 agreed with P5 saying, "I would have probably liked it all at one time in one class. That way we could a lot on it I guess" (348-

349). Other participants thought that the global issues should be fused throughout the curricula. P4 stated “like the course with little bits in, like you are saying where they can cover a broad range depending on what they need to” (270-271). This thought was also echoed by P1 “Maybe rope it into a small part of the class” (414). The latter feel that there is more flexibility to personalize global issues relating them to a topic and therefore it can be made more relevant to local agriculture.

There is an indication that providing the opportunity for a class devoted to global issues does not appear to be enough for pre-service teachers to learn about global issues. Students not being aware of what is available, or not having an incentive to take the course appear to be primary examples. P3 was quite blunt when the topic came up about the international classes offered at the University “I didn’t actually [hear about the classes]” (334) while P2 implied the same thing “I know I was still finding new things up until the day I graduated that UGA offered” (390-391). Students also didn’t take the class, despite hearing about it, such as P1 and P2: “I mean there were, there were some classes but I didn’t actually take them” (P1:336), “I mean I wish I were taken the global studies class that was offered. That sounds like it would be interested, be interesting as well as applicable to this” (P2:259-260).

A few participants were not opposed to making it a requirement to learn about global issues as shown by the following statements:

“well now that they have that international agriculture thing, make it a requirement at least for us to take them or as Ag Ed majors. I think that would be a good one. Or infuse, if we can’t take that class…or the topics and projects into other classes, so.” (P3: 394-396)

“As far as a student-teaching program go I would definitely say require, I would say require that each student, each student teacher be required to do a set number of assignments, they have to create assignments that meet certain parameters for several different aspects and I think for that one make one where the students have to research global issues” (P5: 353-356).

"So, so I would say from that standpoint if there was some kind of, and here is the global seminar class might be the you know, might really need to be pushed more than it is or maybe put as requirement as beneficial as it is" (P2:439-441).

That the Agricultural Education program needs to internationalize is evident in that the participants made reference to how much the program influenced their teaching or thinking. P6 stated "I could definitely say that program is very instrumental in developing teachers" (497-498). Another participant noted that "this class led me to want to research that," (P5: 144) indicating that classes do influence thinking. P2 also spoke about how the program needs to create an opportunity for its students to see the connection to global issues and agriculture:

"Because I mean there are classes designed for teachers for horticulture running a greenhouse or for forestry, for looking at Agriscience, more of a lab based stuff but that where I say there is a need, I think that, who, behooves student-teachers to establish some class, you know where they can really see the big picture themselves… Because some of these kids, I know some of the kids I worked with, they're lost. Like they don't see the big picture at all and I think giving them a global taste of that would really help them because they could make a difference, it would help" (P2:452-461).

Based on the participants' comments it is apparent that they consider the University Agricultural Education program partially responsible for helping them develop an understanding of global issues and helping them determine the connections between global and local events. They also stated that the program can influence their development as a teacher, further highlighting that the University Agricultural Education program should play a role in preparing them to teach about global issues that affect U.S. agriculture.

Conclusions and Discussion

Construction of a global mindset regarding agriculture is not a straightforward process, and unfortunately is not occurring enough among the pre-service teachers interviewed at the University of Georgia Agricultural Education Program as evidenced by the participants' comments regarding their knowledge of global issues that affect U.S. agriculture. According to

the social constructionism theory, interaction between self and the environment is the primary way that people develop their knowledge of the world (Andrews, 2012). Current efforts by pre-service teachers to develop knowledge of global issues that affect U.S. agriculture lack the interaction necessary to develop a deeper understanding. Media and the Internet were cited by many of the participants as their primary source of how they acquire their knowledge of global issues, however both resources only provide a one-way flow of information (from the news to the subject) which is not sufficient in developing an understanding of the connection between global issues. This results in pre-service teachers being unable to see or teach the connections between the global events they hear on the news and how those events will ultimately impact U.S. agriculture. Considering that many participants in the interview indicated that they would require their students to research a global issue, as a means to teach about global issues that affect U.S. agriculture may indicate that secondary agriculture teachers may not have the pedagogical knowledge to transfer their knowledge of global issues into their teaching.

What knowledge participants did acquire about global issues affecting U.S. agriculture revolved around U.S. interactions with the world, particularly trade (imports, exports), possibly in part because it is a clear connection due to the interaction. What isn't said is very telling as well. Participants struggled to provide specific examples of global events and their connection to U.S. agriculture despite researcher probing, indicating that pre-service teachers are not familiar or comfortable enough with their background knowledge to discuss in-depth. This indicates that media and Internet sources lack the interaction needed to develop an in-depth knowledge of how global issues affect U.S. agriculture. While the media and Internet appear to be the primary source that pre-service teachers go to gather knowledge about global issues that affect U.S. agriculture, the University appears to be an opportunity to expose students to those views.

Participants who took a class in global issues affecting U.S. agriculture were better able to go into greater detail about global issues than their counterparts who did not take a class in global issues, although both still struggled on how to connect that issue to U.S. agriculture.

Participants were very vocal about the importance for agriculture teachers to have an understanding about global issues affecting U.S. agriculture. Many of the participants took the initiative to supplement their knowledge by conducting further research, not just because they were interested but because they felt unprepared with their current level of knowledge and believed it was important as a classroom teacher to infuse global agricultural issues in their classes. This indicates that the participants in this study consider knowledge about global issues affecting U.S. agriculture to be important to their future career. In addition, the desire to obtain more knowledge appears to be connected to their desire to ensure their students are globally competent, indicating that there is a place within the teaching aspects of the Agricultural Education program curricula for global agriculture, not just the elective classes. In other words, student development of global competence regarding international agriculture can also be constructed through teaching practices.

Wingenbach et al. (2003) contends that internationalization of the Agricultural Education curricula must involve active participation, rather than be confined to a document. This emphasis on active participation is important, because it appears that the University Agricultural Education program efforts to prepare pre-service teachers are lacking. Participants indicated that University Agricultural Education programs need to be more proactive in educating students about global issues affecting U.S. agriculture. Students were either unaware of classes with a global focus or chose not to take these classes (and later regretted it). One participant stated that there was no push among the University of Georgia program of Agricultural Education for students to become

more globally competent, which shows that the program does not make the importance of global competence obvious through certification or advising efforts, despite literature citing internationalization as a major goal and needed change among CoAs (Moriba et al., 2012; Navarro & Edwards, 2008).

There are mixed reviews as to the best way for the University to help prepare Agriculture Education students, with some proposing a separate class while others propose integration of global issues within the electives. Those who propose a separate class align with Pike and Selby's (2000) view of infusion of global issues, which can be quickly implemented by faculty, but, miss opportunities to demonstrate connections and therefore demonstrate the relevance of global issues to U.S. agriculture. On the other hand, those who propose integration of global issues do so because they believe it will be more relevant to U.S. agriculture and easier for students to make the connection. Regardless of the different opinions, what this does demonstrate is that if there are current internationalization efforts, they are being lost among the other curricula, and that any future initiatives must be obvious with their connections to U.S. agriculture. Students are not constructing the connections between global issues and U.S. agriculture with the current methods being used at the University.

Recommendations

While this was a qualitative study where the results cannot be generalized to a larger population there are still some recommendations for the discipline to consider regarding the development of global competence for Agricultural Education graduates. Agricultural Education programs need to provide more opportunities for students to construct their knowledge of global issues through interactions (ex. discussions, guest speakers, classes, exchange programs) within the program, and not just rely on students learning knowledge from other sources. With this in

mind, it is not recommended to simply provide agriculture teachers with curricula focusing on globalized issues because it does not allow teachers any opportunities to interact with the subject, meaning that the information remains surface level and does not lend itself to helping students develop connections between global issues and how they affect U.S. agriculture. Faculty within Departments of Agricultural Education should be provided opportunities, such as professional development workshops, to develop knowledge of global issues, and the skills to teach them, rather than merely present the information to students.

Participants were not opposed to making some global component to their curriculum mandatory, which contradicts Sammons and Martin (1997) who stated that students were not opposed to internationalization as long as no additional requirements were imposed. It is recommended that University Agricultural Education programs consider making some global component to their program mandatory, whether this takes the form of pre-service teachers being required to take a class that focuses on global issues or incorporating a mandatory assignment into the student-teaching experience that focuses on global agriculture (such as developing a lesson plan for secondary agriculture class). In support of a latter suggestion, P5 stated that during the student-teaching experience each student should be required to teach some topics about global issues affecting U.S. agriculture. This suggestion would help student-teachers become more confident with the subject material since practical experience has a strong influence on confidence level (Cahill and Skamp, 2003).

When participants were requested to describe how they might introduce a topic on global issues into their classes, they had several suggestions, but two themes emerged: (1) adopt a systems perspective to demonstrate the impact global agriculture has locally and (2) have students research the problem themselves. If Agricultural Education programs seek to

internationalize their curricula they might want to consider following along the lines of the pre-service teachers' suggestions for introducing the topics, and use both the systems approach and the research approach. The former method aligns with Acker's (1999) call for teaching agriculture from a systems perspective and would be ideally suited to showing the connections between global and local agriculture. Simply providing students with opportunities to learn more about global issues affecting U.S. agriculture may not be sufficient for Agricultural Education programs to produce more competent students. That the program should take a more active role in engaging students in global issues is evident, particularly because it plays an important role in influencing student development.

Further research should be conducted to determine if the results of this study can be generalized to other Agricultural Education programs across the nation. Understanding how students construct their knowledge of global issues provides the discipline with a greater understanding of how students develop a global competence. This knowledge can be applied to determine what direction Agricultural Education departments might want to take in regards to internationalization efforts and determine where improvement is needed. It is recommended that a Delphi study be conducted to ask Agricultural Education faculty about various methods they are using or could be using to help pre-service agriculture teachers acquire knowledge of global issues that affect U.S. agriculture and how they would teach their pre-service teachers to apply the knowledge gained in their secondary classrooms. Agriculture teachers are the forefront of efforts to ensure secondary agriculture students are prepared to work in a globalized workplace and it is imperative they receive the opportunities to develop their knowledge and feel comfortable to teach about global issues that affect U.S. agriculture.

CHAPTER 3

A GUIDE FOR TURNING NEEDS ASSESSMENTS INTO QUESTIONNAIRES[2]

[2] Sharp, K.R., Fuhrman, N.E., & Navarro, M. To be submitted to the Journal of Evaluation.

Abstract

Prior to any evaluation project or research, a needs assessment should be conducted in order to help the evaluator a better define the problem, provide data for decision making, identify questions that should be asked (or how they should be asked), and/or identify stakeholders (Gupta, Sleezer & Russ-Eft, 2007). This article describes a process an evaluator may follow to convert qualitative data collected from a needs assessment into a quantitatively focused questionnaire. This five step systematic process involves qualitative data collection and analysis, development of constructs/themes on a questionnaire, peer review of the questionnaire, pilot testing the questionnaire, and testing the strength of the constructs/themes on the questionnaire from a reliability and validity standpoint. Using this process will help ensure that a quantitative instrument is targeted, interpreted consistently by respondents (reliability), and collects information aligned with evaluation objectives (content and construct validity).

Introduction

Questionnaires and surveys are one of the most popular methods used in evaluation and often times the only communication between the evaluators and the respondents (Covert, 1984). Knowing this, it is critical that the respondents clearly understands what is being asked, and the evaluators clearly capture what they intend to measure when developing a questionnaire. Needs assessment data can provide a solid foundation to build a questionnaire, particularly because they are conducted with the purpose of gathering information about the situation that is to be measured. A priority of extension professionals desiring to evaluate their educational efforts is to conduct a needs assessment before beginning any project or research in order to obtain data that will help focus the evaluation on a direction (Caravella, 2006). There are a variety of tools available to conduct needs assessments. Three common qualitative methods that can be used are

interviews with stakeholders, focus groups, and/or advisory panels. These methods provide the evaluators with a rich form of qualitative data, which gives the evaluators a greater understanding of the issue being evaluated, that cannot be determined purely through statistics and numbers (Rogers & Goodrick, 2010). However, the advantage of qualitative data is also its disadvantage as the evaluators have to condense the information and determine what to do with it. One method is to turn the data collected during the needs assessment into a questionnaire, which is the most frequently used method of collecting data for those conducting evaluations (Radhakrishna, 2007).

The process of turning needs assessment data into a questionnaire is an effective way to accurately measure and increase trustworthiness of data being collected because the evaluator is using a mixed methods approach with both qualitative and quantitative data (Newman, Lim & Pineda, 2013). The steps provided in this article involve qualitative data collection and analysis, and questionnaire development, including peer review, pilot testing, and examining the questionnaire's ability to measure phenomena accurately and consistently.

Step 1: Analysis of Needs Assessment Data

The analysis of qualitative data can be described using the analogy of sorting buttons. If a pile of buttons is laid out on a table, each person will go about sorting the buttons in his or her own way, some by color, some by shape, some by the number of buttons holes, and some by size. As the sorting process continues, the individual will find that he or she will further separate a group (ex. "red group" becomes "the red-yellow group" or "red-blue group") or consolidate a group (ex. "tiny size group" gets incorporated into "small group"). Each person goes about sorting the data in his or her own way, but the commonality is that each process is systematic and can be justified (Krueger & Casey, 2010). Such is the case when it comes to collecting and

analyzing qualitative data. During the sorting process, the individual assigns codes to sections of data that act as a summary (see Table 3.1) of what has just been analyzed. The individual then looks to determine if there are any commonalities that could be developed into a theme among the codes and group accordingly. The theme is essentially the variable that is to be measured, so the evaluator needs to group codes in such a way that they help quantify the variable.

Table 3.1
Converting Qualitative Data Into Codes Using Needs Assessment Data

Qualitative Data	Qualitative Code(s)
”Like I try to read one at least like every day in the news”	Use of news as a source
“biggest source I have right now was, is I mean clearly just like the news”	Use of news as a source
“Oh man I really don’t keep up the way that I should [referring to global issues]. I think that I am so busy as an Ag teacher”	Difficult to keep up with global issues
“So a lot of that stuff I would say it a lot of it is what I have, I guess I haven’t found a direct line”	Can’t find a direct line

Step 2: Develop Constructs/Themes on a Questionnaire

To begin developing the questionnaire, the evaluator needs to turn the codes he or she has formed into statements. As a general rule, each theme (group of codes) identified in Step 1 should generate at least three statements or questions which will become a “construct” or theme on the questionnaire, which serves as a variable to measure the phenomena being evaluated. It can be difficult to measure hypothetical phenomena in people, and multiple statements/questions which are related are often needed to describe the “dimensions” of the phenomena. The development of the construct mirrors the grouping of codes into themes in Step 1, however, Step 1’s process is used to determine the big questions (theme) while Step 2’s process is to determine how the questions found in Step 1 are to be measured. See Table 3.2 for an example of how the

author used data collected during the needs assessment and turned them into a statement and developed a construct. After the statements have been developed the evaluator needs to create a response option for each statement or question. A common response option is called the Likert-type scale. The Likert-type scale is where respondents will indicate a level of disagreement or agreement by selecting one of four or five options (typically range from "strongly disagree" to "strongly agree" on each end) with each response option being assigned a number (e.g. 1= "strongly disagree" to 4="strongly agree") to be later used for analysis (Huck, 2004).

Table 3.2
Process Used to Develop Questionnaire Statements (Items) and Constructs Using Needs Assessment Data.

Qualitative Data	Qualitative Code(s)	Quantitative Statement with Associated Answer Choices	Construct/Theme Name on the Questionnaire
"Like I try to read one at least like every day in the news"	Use of news as a source	I visit websites or listen/watch/read the news more than two times a week to keep up with global issues (strongly disagree to strongly agree)	Ability to Develop Knowledge of Global Issues that Affect U.S. agriculture
"biggest source I have right now was, is I mean clearly just like the news"			
"Oh man I really don't keep up the way that I should. I think that I am so busy as an Ag teacher"	Difficult to keep up	I do not have the time to keep up-to-date about current issues that could affect U.S. agriculture (strongly disagree to strongly agree)	
"So a lot of that stuff I would say it a lot of it is what I have, I guess I haven't found a direct line"	Difficult to Connect	It is difficult to for me to connect global issues to U.S. agriculture (strongly disagree to strongly agree)	

Step 3: Engage in a Review Process

There are four main errors that can cast doubt on the results of the questionnaire if not addressed during its review process (Dillman, 2007). One situation that can lead to measurement error occurs when participants interpret the question differently than what the questionnaire developer was trying to ask, so participants' are not really answering what the questionnaire developer was asking. If measurement error is not addressed it casts doubts on the validity of the questionnaire. One way to reduce measurement error is to go through a review process, where the evaluator has several people take the questionnaire and answer the questions as though they were the intended respondents of the questionnaire. If possible the questionnaire developer should also recruit reviewers that are similar to the intended recipients so that different "groups" can provide feedback. The reviewers should make comments as to where there could be any confusion with any of the questions, when they could not completely understand a question or when they have suspicions that someone could interpret the question in different ways. Together the developer and reviewers discuss their thoughts about the questionnaire and the evaluator makes adjustments to the statements/questions accordingly. For example, a question may read "I know a lot about global issues" and the reviewer may flag the question and ask the instrument developer to define "a lot", to which the instrument reviewer will re-word the question to read "I know about at least 4 global issues". This step is crucial in ensuring the validity of the instrument that is being created.

Step 4: Pilot Study

Before the questionnaire is to be sent out to participants, it is important to test it to ensure that the constructs have been formed appropriately, which will determine the reliability of the instrument. A pilot study ensures that the questionnaire is consistently measuring what it is

supposed to measure (Radhakrishna, 2007). It is recommended that the pilot study have at least 30 responses in order to be able to use statistics which allow the user to generalize the data to a larger population of interest. Low response numbers can be an issue when it comes to questionnaires sent electronically and through the postal mail, so it is also recommended that the evaluator send out more questionnaires than required in order to account for individuals who choose not to participate. The pilot study should be sent to either a small selection of the target participants (note: participants of the pilot study cannot be the same participants for the study) or to a group that is similar to the target participants (ex. if measuring first year teachers, select second year teachers). Many Extension professionals who develop questionnaires and pilot their effectiveness follow procedures outlined by Dillman (2007).

Step 5: Testing the Strength of Constructs/Themes on the Questionnaire

Once data has been collected from the questionnaire, the results should be transferred into statistical software such as SPSS (Statistical Package for Social Sciences) or Excel. Within SPSS Cronbach's alpha can be calculated under the analyze section, and there are Excel templates online that calculate Cronbach's alpha once data has been entered. Cronbach's alpha measures internal consistency (Huck, 2004) and is a method to assess reliability. Cronbach's alpha has a value of 0 to 1, and while there are different interpretations as to what is a recommended value, typically a value of .7 or above is an acceptable reliability (Peterson, 1994). It is rare to achieve an alpha of 1, and reliability scores of .85-.95 are excellent for the purposes of the questionnaire. Within SPSS, there is also an option to "view alpha if item is deleted" which allows the researcher to determine if there are any statements that do not belong in the construct and therefore are lowering the reliability of the constructs. This process helps an evaluator determine which questions should remain in the final questionnaire and which ones are making each of the

constructs less reliable (see Table 3.3). It is important to remember though to not compromise validity in order to increase reliability. In other words, the researcher should not delete an item solely to increase reliability if that item is important from a validity standpoint.

Table 3.3
SPSS option "Cronbach's Alpha if Item Deleted" for Supporting Teaching About Global Issues Construct; Cronbach's alpha: .617 for the construct

Item	Cronbach's Alpha if Item Deleted
I would like to learn more about global issues that affect U.S. agriculture.	.708
It is important to teach global issues in my middle/high school Agriculture Education classes.	.538
I feel I have a responsibility to help my students learn about global issues that affect U.S. agriculture.	.519
Middle/high school Agriculture Education classes should have more global issues incorporated into them.	.557
I would like to have a wide variety of resources (movies, guest speakers, websites, instructional materials, etc.) to help me teach global issues that affect U.S. agriculture.	.609
I have no interest in keeping up to-date with global issues. (Reverse coded)	.592
I am not interested in teaching global issues that affect U.S. agriculture to my students. (Reverse coded)	.519
I do not feel that it is important to have a new course in the Agricultural Education curriculum (e.g. International Agriculture course) that addresses global issues in my middle/high school. (reverse coded)	.595

Conclusions

Needs assessment data is a rich resource for helping develop questionnaires. Using a systematic process to convert needs assessment data into a questionnaire can increase both validity and reliability. Analysis of the needs assessment data via coding allows for the development of items (questions) and constructs (variables) that compose the backbone of the questionnaire. A review

process helps ensure the validity of the questionnaire being developed by reducing measurement error, and a pilot study and analysis of the constructs ensures reliability (the questions in each construct are measuring the same thing). Utilizing needs assessments as a foundation for the development of a questionnaire can provide a level of reassurance that the results can be used to inform programmatic change.

CHAPTER 4

INVESTIGATING UNIVERSITY AGRICULTURAL EDUCATION PROGRAM'S ROLE IN PREPARING TEACHERS TO TEACH ABOUT GLOBAL ISSUES AFFECTING U.S. AGRICULTURE[3]

[3] Sharp, K.R., Navarro, M., & Fuhrman, N.E. To be submitted to the Journal of Agricultural Education

Abstract

The agriculture industry increasingly needs workers who are globally competent and prepared to work in a globalized workforce. Agricultural Education at the secondary level plays an important role in preparing students to work in the agriculture industry, and agriculture teachers play a key role in preparing students for the challenges they will face in a more globalized world. The purpose of this study was to investigate the level of knowledge and preparation regarding teaching about global issues that affect U.S. agriculture, and what they perceive is the role of University Agricultural Education programs' in preparing agriculture teachers. A stratified sample of 160 agriculture teachers in six Southern States responded to an online questionnaire. Findings suggest that agriculture teachers slightly agree that they are knowledgeable about global issues that affect U.S. agriculture. They also slightly agree that they support teaching global issues in their secondary agriculture classrooms, and they mostly agree they have a responsibility to teach global issues in their classroom. Agriculture teachers also slightly agree that the University Agricultural Education programs have a responsibility to prepare agriculture teachers to teach about global issues that affect U.S agriculture. One recommendation is that University Agricultural Education programs prepare agriculture teachers in both content knowledge and pedagogical knowledge regarding global issues.

Introduction

Globalization has irrevocably changed the nature of agriculture, and the demands of individuals who wish to be involved in the industry. According to the Longview Foundation (2008) world events have made it abundantly clear that teachers in secondary education need to internationalize their classes, and yet are not prepared to teach about global competencies. The same holds true regarding agriculture teachers who have the responsibility to prepare students for

successful careers in a globalized world (National Council for Agricultural Education [NCAE], 2009). If teachers are not globally competent then they will be unable to prepare their students to work in a global environment (Conners & Roberts, 2013). This puts agriculture students at a disadvantage because according to Zhai and Scheer (2004) students must be prepared to compete effectively in an internationalized workforce. Agricultural education must evolve in order to remain at the cutting edge of the changes globalization has brought (Elliot & Yanik, 2004).

Agriculture teachers have been identified as the key to delivering global agriculture education to students (NCAE, 2011). In order to help agriculture teachers create relevant and well planned materials, the NCAE prepared *National Agriculture, Food, and Natural Resources (AFNR) Career Cluster Content Standards* which provide a curriculum guide for secondary agriculture teachers. One proposal to increase global engagement in the secondary agriculture classes suggests that global elements should be infused with AFNR content standards (NCAE, 2009). However, for any strategy involving the internationalization of the secondary agriculture curriculum to be effective, the knowledge, attitudes and interests of secondary agriculture teachers must be known. While research has been conducted regarding pre-service teachers' knowledge and attitude towards international agriculture and internationalization efforts at the undergraduate level (Moriba, Edwards, Robinson, Cartmell & Henneberry, 2012; Sammons & Martin, 1997; Wingenbach, Boyd, Lindner, Dick, Arispe & Haba, 2003) little research has been conducted on the knowledge of global issues among current agriculture teachers. In addition, there is little knowledge as to what agriculture teachers believe is the University Agricultural Education programs role in developing current (and future) agriculture teachers knowledge of global issues that affect U.S. agriculture. By discovering the current situation regarding agriculture teachers' knowledge and interest in teaching about global issues that affect U.S.

agriculture, University Agriculture Education programs can more effectively develop methods to assist current and future teachers in teaching their secondary students about global issues that affect U.S. agriculture.

Literature Review

According to Moriba et al. (2012) the development of citizens who have an understanding of global issues may greatly affect the future of the United States, as the world continues to become more globalized. The agriculture industry is not immune to this pressing demand for globally competent workers, particularly after the passage of the North American Free Trade Agreement (NAFTA) in 1994, which brought international agriculture in direct contact with American agriculture (Wingenbach et al., 2003). The demand for workers who have the ability to work in a global workplace has grown considerably in the past couple of decades within the agriculture industry (Navarro & Edwards, 2008). College of Agricultures (CoAs) have responded to this demand by attempting to internationalize their curriculum so that students who graduate have the skills necessary to work in a globalized workforce. The internationalization of the Agricultural Education program can have important implications for both agriculture teachers and secondary students because the program has the potential to play an important role in teacher development.

According to Darling-Hammond, Chung & Frelow (2002) teachers who graduate from a teacher certification program feel more prepared to teach about subjects covered within the program. This is echoed by Cahill & Skamp (2003) who found that teacher education programs can influence the confidence level about subject matters covered in the program. Alongside increased confidence and preparation to teach about subject matter, Darling-Hammond, Chung & Frelow (2002) also found that teachers felt more responsibility towards student learning as a

result of graduating from a teacher preparation program. The potential influence that Departments of Agricultural Education can have on preparing future agriculture teachers needs to be considered when determining the best practices for internationalizing CoAs.

While internationalization efforts should continue at the collegiate level to ensure that future agriculture teachers are graduating globally competent, research also needs to be conducted on current agriculture teachers regarding their knowledge of global issues that affect U.S. agriculture. It is estimated that there are approximately 10,600 agriculture teachers currently teaching in the United States (Kantrovich, 2010) and very little research has been conducted to determine what their current level of knowledge is regarding global issues that affect U.S. agriculture and their interest in teaching global agriculture in their secondary classrooms. The study's theoretical framework focuses on the pedagogical content knowledge (PCK) to investigate agriculture teacher preparedness to teach about global issues that affect U.S. agriculture.

PCK involves how teachers transform subject matter knowledge into a format that facilitates student learning (de Driel, Verloop & de Vos, 1998). The relationship between content and pedagogy was first introduced by Shulman (1986) who wrote that research involving teacher's knowledge must not ignore content of lessons in favor of developing more effective teaching practices (Shulman, 1986). According to Shulman (1986) there are three categories of content knowledge that teachers must develop in order to transition from student to teacher: (1) subject matter, (2) pedagogical and (3) curricular knowledge. Subject matter knowledge is defined as how teachers structure their knowledge and goes beyond simply understanding the subject matter to include how they relate that knowledge in different contexts. Pedagogical knowledge focuses on knowledge that allows teachers to transfer their knowledge into a

teachable format. Lastly, curricular knowledge focuses on the programs and materials that assist teachers in teaching about particular subjects. This study seeks to investigate agriculture teachers' current level of subject matter knowledge as well as their level of pedagogical knowledge to teach global issues, in order to determine how prepared agriculture teachers perceive themselves to be to teach about global issues that affect U.S. agriculture.

Purpose and Objectives

The purpose of this study was to investigate agriculture teachers' knowledge of and interest in global issues that affect U.S. agriculture and determine what role they think their University Agricultural Education program should have in preparing them. The research questions were:

1. How interested and prepared are agricultural education teachers to help their students understand global issues affecting U.S. agriculture?
2. How much responsibility should University Agricultural Education programs have in preparing agriculture teachers to teach their students about global issues affecting U.S. agriculture?
3. How much influence do University Agricultural Education programs have on the teaching practices of their graduates?

Methods

Instrument Design

According to Dillman (2007) there are four main errors that must be addressed when conducting survey research: sampling error, coverage error, measurement error, and nonresponse error. Following Dillman's (2007) Tailored Design method, the researcher attempted to reduce these errors. By using a stratified random survey, the researcher has minimized sampling error. The list-servers obtained by the researcher contained the teacher's school e-mail addresses which

indicated that they at least had access to a computer, which helped minimize coverage area. Measurement error was minimized using peer review of the questionnaire and is described in the next section. The one area of concern is nonresponse error, due to the fact that during the pilot stage of the study there was only a 15.5% response rate (n = 17). In order to try to minimize nonresponse error, the researcher carefully designed and practiced implementation procedures to motivate people to respond based on the Tailored Design Method and Social Exchange Theory.

The Tailored Design Method and Social Exchange Theory (based on reward, reducing costs and establishing trust) were used in order to increase response rate of potential participants via e-mail (Dillman, 2007). One component of the Tailored Design Method includes the five step contact method that is designed to increase response rate. The steps are as follows: pre-notice e-mail (2-3 days before questionnaire is sent out), e-mail with link to online questionnaire, follow up e-mail reminding people to respond (4-7 days after link e-mail), second reminder e-mail with link (4-7 days after first reminder e-mail) and final contact via phone. Due to time and IRB constraints only the first three steps of Dillman's (2007) five step contact method were used for this questionnaire (see Appendix E).

Using practices based on Social Exchange Theory, the pre-notice e-mail contained an introduction of who the researcher was, what the questionnaire was about, how long the questionnaire would take, and that their input was extremely valuable. The latter point was mentioned in all three e-mails. The researcher also thanked those who participated in the questionnaire during the reminder e-mail.

The questionnaire was divided in six main sections with headings and instructions on the top of each page. Each question was numbered to help the participants keep track of where they were. The questionnaire was reviewed by two professors in the Agricultural Leadership,

Education, and Communication Department and revisions were made based on their recommendations. In addition, five graduate students "took" the revised questionnaire to further look for any questions that may have been misconstrued. Their comments were taken into account and the questionnaire was revised a second time with the help of a professor in the Agricultural Leadership, Education and Communication Department. The final version was sent to three professors on the researcher's committee to check for content validity before sending the questionnaire to the prospective respondents. Institutional Review Board (IRB) approval was given for the revised questionnaire and an informational consent form was included in the introduction to the questionnaire section per the requirements of IRB (see Appendix D).

Instrument

The final revised version of the instrument contained five constructs and demographic data, and included open-ended questions (see Appendix F). The constructs consisted of the following:

"Participants' Knowledge of Global Issues that Affect U.S. Agriculture" (Knowledge) (12 items in the construct), "Participants' Support for Teaching Global Issues That Affect U.S. Agriculture " (Support) (eight items in the construct), "Participants' Assessment of the Responsibility of the University's Agricultural Education Program to Prepare Students about Global Issues" (Responsibility AgEd Programs) (seven items in the construct), "Participants' Access to Resources to Teach Global Issues That Affect U.S. Agriculture" (Access to Resources) (three items in the construct) and "Agricultural Education Program Influence on Participant Development as Teachers" (Program Influence) (six items in the construct). The response options within each construct were as follows: 1=completely disagree, 2=mostly disagree, 3=slightly disagree, 4=slightly agree, 5=mostly agree, and 6=completely agree. Demographic

questions consisted of gender, the state the participant was currently teaching in, the Agricultural Education they graduated from, age, years they have been teaching, years since they had graduated from their Agricultural Education program, level of secondary agriculture that they taught, if they had traveled outside the U.S. and if they took a class that focused on international agriculture while in university. There was also an open-ended question asking participants to share their thoughts on the topic. The questionnaire in total consisted of 53 questions and was administered online using the program SurveyMonkey.

Calculation of Sample Size

Descriptive statistics were used to analyze the data. A sample from all active agriculture teachers in the southern region of the United States was chosen. Southern region was determined by the American Association for Agricultural Education (AAAE) classification of southern states which include: Alabama, Arkansas, Florida, Georgia, Kentucky, Louisiana, North Carolina, Oklahoma, South Carolina, Tennessee, Texas, and Virginia. The researcher decided to take as a sampling frame all active agriculture teachers because they are experienced with teaching agriculture, and have gone through some form of an agricultural program or training at the University level to become certified. Per Institutional Review Board (IRB) the researcher contacted either a professor at the Land-Grant University of each State or the head of the list-serve for all agriculture teachers found online for the State to either obtain a list-serve of all active teachers or obtain permission to contact the teachers. The following states responded to the researcher's inquiry: Alabama, Arkansas, Florida, Georgia, Kentucky, Louisiana, North Carolina and Tennessee. Due to conflicts with research, the researcher decided to not to include Louisiana and Tennessee in the study leaving six states in the study. The researcher decided to treat each State as a separate population rather than aggregate them to calculate sample size

because the instrument construct "program influence" implied that there may be differences in each State and therefore warranted that each state be treated as a separate.

According to Bartlett, Kotrlik, and Higgins (2001) sample size and nonresponse bias are critical when it comes to quantitative research. In order to calculate the sample size, Cochran's (1977) formula for continuous data was used (as cited in Bartlett, Kotrlik, & Higgins, 2001). The formula for continuous data was used rather than the formula for categorical data given the focus on the constructs. Further, taking into account the expected nonresponse, the sample size calculated would exceed the population size and therefore turn the study into a census. The formula used is found in Figure 4.1. The alpha level was pre-determined to be .05 with the t-value being 1.96 because the sample size was higher than 120 (Bartlett, Kotrlik, & Higgins, 2001).

$$n = \frac{t^2 * s^2}{d^2}$$

Cochran's (1977) formula to calculate sample size for continuous data (as cited in Bartlett, Kotrlik, & Higgins, 2001) where *t* is the alpha level, *s* is the standard deviation in the population (using a six point scale), and *d* is the acceptable margin of error for means.

Figure 4.1. Formula for Calculating Continuous Sample Size.

The sample size obtained from Figure 4.1. exceeded the population size of all six states by 5% so the researcher had to use Cochran's (1977) formula to calculate the final sample size seen in Figure 3.2., where n_0 is required return sample size (according to Cochran's continuous sample size formula).

$$n = \frac{n_0}{(1 + n_0 \div \text{population})}$$

Cochran's (1977) formula to calculate sample size for continuous data (as cited in Bartlett, Kotrlik, & Higgins, 2001) to adjust for sample size that exceeds 5% of the population, when n_0 represents the required return sample size (see Figure 4.1.)

Figure 4.2. Formula Calculating Continuous Sample Size Determinant Adjusted for Sample Size Exceeding 5% of Population.

Figure 4.2. computes the number of responses needed. To determine how many people it needed to be sent to, the researchers also need to account for nonresponse. A quick purview of the studies submitted in the Journal of AAAE that reported sample size indicated that response rate can range between 30%-80%, although (when) the method was reported these results were not solely obtained using Internet survey methods. The researcher chose 40% as an anticipated response rate, and adjusted the number of questionnaires to be sent accordingly using the following equation (Figure 4.3.):

$$n = \frac{sample\ size}{anticipated\ response\ rate\ (in\ percent)}$$

Figure 4.3. Sample size was calculated using the equation in *Figure 4.2.* and anticipated response rate was set at 40%,

Figure 4.3. Formula for Adjusting Sample Size Taking into Account Response Rate.

Using Figure 4.3's equation the following sample sizes were calculated for the six states (Table 1.0). Using a Microsoft Excel random number generator add-on (numbers 1-10,000) the researcher sorted the list-serve e-mails in numerical order in order to obtain a random sample.

Table 4.1
Adjusted Sample Size for Each State

State	Needed Sample Size	Adjusted Sample Size
Alabama	50	125
Arkansas	45	111
Florida	51	128
Georgia	53	132
Kentucky	49	122
North Carolina	51	127

Data Analysis

The individual statements (items) of the questionnaire were grouped into constructs, pre-determined from the pilot study. For each construct, the researchers calculated the Cronbach's alpha (reliability), mean and standard deviation for each state. Responses to the following items (statements) were reverse-coded: 4, 6, 7, 10, 11, 15, 16, 19, 21, 22, and 24. Due to measurement error, questions 20 and 23 were excluded from the final analysis because they were specifically worded for Georgia and were not relevant to the other five states. The "Access to Resources" construct was excluded from the final analysis because there was no homogeneity in the construct among states and there was a concern with the interpretation, so results were reported using item analysis. Demographic data were measured using frequency, percentages, mean and standard deviation.

Limitations

Despite attempts to improve response rate, the researcher was unable to obtain the minimum sample size needed for any state. The response rate ranged from 13% for Alabama to 29% for North Carolina. In total only 160 participants responded to the questionnaire across all

six states. This low response rate could influence the results of the study and may have resulted in nonresponse error. An important aspect related to nonresponse error that could skew results is that those participants who did choose to participate in the study may not be representative of the population, perhaps because they felt passionately about the topic as opposed to the rest of the population. The questionnaire was also sent out to only half of the Southern region, so results cannot be generalized to the entire South or to the nation as a whole.

Results

Demographics

The following demographic information was collected for each state: gender, number of years teaching agriculture, number of years since graduating from an Agricultural Education program, what level (high/middle/combination) of agriculture taught, travel outside the U.S. and was an international agriculture class taken at University? The information is presented in Table 4.2 below. All percentages are reported as valid percent.

On average the agriculture teachers have taught for over a decade, with most starting teaching within two years of graduating. With the exception of Florida, well over a majority of agriculture teachers teach at the high school level. North Carolina and Florida have the largest percentage of teachers who have traveled abroad (71.4% and 68% respectively), with Arkansas having the least (35.3%). Very few teachers have taken an international agriculture or global issues class at the University with Kentucky having the highest percentage of teachers (27.8%). Aside from Kentucky, the other states had less than a quarter of students take an international agriculture class, with Alabama having no teachers take a class.

Table 4.2
Demographic Information by State

Demographic	Alabama	Arkansas	Florida	Georgia	Kentucky	North Carolina
Gender	91.7% M (n=11) 8.3% F (n=1)	82.4% M (n=14) 17.6% F (n=3)	42.3% M (n=11) 57.7% F (n=15)	38.9% M (n=7) 61.1% F (n=11)	66.7% M (n=12) 33.3% F (n=6)	45.7% M (n=16) 54.3% F (n=19)
Years Taught	12.08 M 9.65 SD Range:1-35	21.85 M 14.35 SD Range:2-53	9.73M 9.94 SD Range:0-31	13.18 M 9.34 SD Range:0-31	11.06 M 9.83 SD Range:1-27	11.6 M 9.64 SD Range:1-31
Years Since Graduation	14.0 M 10.26 SD Range:1-35	25.31 M 13.5 SD Range:2-53	13.4 M 12.53 SD Range:0-32	15.13M 9.61SD Range:0-36	12.94 M 11.60 SD Range:2-36	12.89 M 11.49 SD Range:1-42
Level Taught	High: 75% (n=9) Middle: 0% (n=0) Combination: 25% (n=3)	High: 82.4% (n=14) Middle: 0% (n=0) Combination: 17.6% (n=3)	High:42.3% (n=11) Middle:46.2% (n=12) Combination: 11.5% (n=3)	High:82.4% (n= 14) Middle:11.8% (n= 2) Combination: 5.9% (n=1)	High:94.4% (n= 17) Middle: 5.6% (n= 1) Combination: 0% (n=0)	High: 91.4% (n=32) Middle: 5.7% (n=2) Combination: 2.9% (n=1)
Traveled Outside the U.S.	Yes: 50% (n=6) No: 50% n= 6	Yes: 35.3% n=6 No: 64.7% n=11	Yes: 68% n=17 No:32% n=8	Yes: 41.2% n= 7 No: 58.8% n=10	Yes: 44.4% (n=8) No: 55.6% (n=10)	Yes:71.4 % (n=25) No: 28.6% (n= 10)
Took an International class in University	Yes: 0% (n=0) No: 100% (n=11)	Yes: 5.9% (n=1) No: 94.1% (n=16)	Yes: 12% (n=3) No: 88% (n=22)	Yes: 11.8% (n= 2) No: 88.2% (n=15)	Yes:27.8 % (n=5) No: 72.2% (n=13)	Yes: 23.5% (n=8) No:76.5 % (n=26)

Question 1: How interested and prepared are agricultural education teachers to help their students understand global issues affecting U.S. agriculture?

A construct was created to measure preparation by looking at teacher's Knowledge of Global Issues that Affect U.S. Agriculture, which was sub-divided into "Knowledge Content of Global Issues (Content)" and "Knowledge on How to Teach Global Issues (Pedagogy)" A six-point rating scale (1=*completely* disagree to *6=completely* agree) was used to evaluate the constructs. Table 4.3 provides the information about the Knowledge Construct, including reliability (Cronbach's alpha), mean summated score for the construct, and the standard deviation. For the Knowledge Construct the minimum summated mean score could be a 12 with the maximum summated mean score of 72, with higher values indicating that agriculture teachers perceived themselves as being more knowledgeable about global issues that affect U.S. agriculture.

Table 4.3
Knowledge of Global Issues that Affect U.S. Agriculture Construct Information

State	**Cronbach's alpha**	**Mean Summated Score per state**	**Standard Deviation**
Alabama	.771	50.94	8.54
Arkansas	.790	44.05	9.01
Florida	.920	51.77	11.45
Georgia	.776	46.63	8.22
Kentucky	.933	48.44	12.15
North Carolina	.886	48.44	10.68

Cronbach's alpha was above .7 for all, indicating that the construct is internally consistent. Four states (Alabama, Florida, Kentucky and North Carolina) indicated that they slightly agreed that they were knowledgeable about global issues, with Arkansas and Georgia both reporting that they slightly disagree that they are knowledgeable about global issues. In particular, teachers indicated that they would like to learn more about global issues that affect U.S. agriculture (range in means from 4.8 *SD*=1.18 for Arkansas to 5.27 *SD*=.85 for North

Carolina) indicating that there is an interest in learning about global issues and that there is knowledge to be gained. In regards to knowledge acquisition and therefore preparation efforts, all states reported scores either mostly disagree to slightly disagree (mean range of 2.72 *SD*=1.32 Arkansas, to 3.29 *SD*=1.4 Kentucky) for their Agricultural Education programs addressing global issues.

The knowledge construct was sub-divided into two categories to examine agriculture teachers' knowledge (content) of global issues and their knowledge on how to teach (pedagogy) global issues. The states were split evenly between those who slightly agreed that they were knowledgeable about global issues (Alabama, Florida, and North Carolina) and those who slightly disagreed that they were knowledgeable about global issues (Arkansas, Georgia, and Kentucky). However, all the states except Arkansas reported that they slightly agreed that they were knowledgeable to teach about global issues. To compare the two constructs the researchers divided the summated score by the number of items. The participants perceived that their Agricultural Education programs emphasized the pedagogy over the content based on a comparison of the standardized means. North Carolina and Florida did not have a substantial difference between the means with North Carolina reporting a Content mean of 4.02, and a Pedagogy mean of 4.05 and Florida reporting a Content mean of 4.29 and a Pedagogy mean of 4.34. However, the other four states had a larger gap between the two means, with the smallest gap belonging to Arkansas which had a Content mean of 3.66 and a Pedagogy mean of 3.82 and the largest gap belonging to Georgia and Alabama with Georgia reporting a Content mean of 3.84 and a Pedagogy mean of 4.15 and Alabama reporting a Content mean of 4.14 and a Pedagogy mean of 4.45.

Table 4.4 addresses the support for teaching construct, where the minimum summated mean is eight points and the maximum summated mean could be 48 points within this construct, with higher values indicating that agriculture teachers are more supportive of teaching global issues in their secondary classes. Cronbach's alpha is .8 or above for all states except Alabama and Kentucky, indicating that this construct has a strong reliability. Teachers in all six states thought it was important to teach global issues in middle/high school agriculture classes (range in means from 4.68 *SD*=.89 Georgia to 5.44 *SD*=.58 Florida). They also mostly agreed that they had a responsibility to help their students learn about global issues with over half the states (n=4) reporting a mean score of 5.0 or above on that item. Consequently, aside from Alabama which reported a mean of 4.27 *SD*=1.03, the other states slightly disagreed when indicating that they were prepared to teach global issues that affect U.S. agriculture (lowest mean was 3.35 *SD*= 1.46 Kentucky). Overall, all states slightly agreed or mostly agreed that they supported teaching global issues that affect U.S. agriculture in their secondary classrooms.

Table 4.4
Support for Teaching Global Issues That Affects U.S. Agriculture Construct Information

State	**Cronbach's alpha**	**Mean Summated Score per state**	**Standard Deviation**
Alabama	.617	37.34	5.23
Arkansas	.885	36.06	6.84
Florida	.807	40.59	4.77
Georgia	.874	36.00	6.62
Kentucky	.621	37.65	4.20
North Carolina	.901	40.15	6.20

Question 2: How much responsibility should the University Agricultural Education programs have in preparing agriculture teachers to teach their students about global issues affecting U.S. agriculture?

One construct was developed to measure the "Participants' Assessment of the Responsibility of the University's Agricultural Education Program to Prepare Students about Global Issues" (Responsibility). This construct also included items that suggested how the Agricultural Education program should structure their program to better prepare agriculture teachers to teach global issues affecting U.S. agriculture. A six-point rating scale (1=*completely* disagree to *6=completely* agree) was used to evaluate the construct. Table 4.5 provides the information about the University Agricultural Education Program construct, including reliability (Cronbach's alpha), mean summated score for the construct, and the standard deviation. For the "Responsibility" construct the minimum mean score could be a seven with the maximum summated mean score of 42 with higher values indicating that agriculture teacher believe that the University Agricultural Education program has a responsibility to prepare students about global issues.

Cronbach's alpha was higher than .7 for all states except Florida, indicating that the construct is internally consistent. All states except for Georgia slightly agree that the University Agricultural Education program has a responsibility to prepare students about global issues, with Georgia reporting a mean of 3.93 indicating that while they slightly disagree, they are close to slightly agreeing. However, with the exception of North Carolina (mean 4.03 *SD*=1.3) all the states slightly disagreed that the University Agricultural Education program has the responsibility to provide ready-made materials to help in teaching about global issues. With the exception of Georgia (mean 3.69 *SD*=1.3), all the states slightly agreed that Agricultural

Education students should be required to take a class about global issues (mean range 4.06 *SD*= 1.14 Kentucky to 4.69 *SD*=1.03 Alabama).

Table 4.5
Responsibility of the University's Agricultural Education Program to Prepare Students about Global Issues Construct Information

State	**Cronbach's alpha**	**Mean Summated Score per state**	**Standard Deviation**
Alabama	.764	30.38	5.66
Arkansas	.855	28.43	6.31
Florida	.631	31.50	3.97
Georgia	.882	27.53	6.97
Kentucky	.927	28.83	7.30
North Carolina	.767	.32.25	4.95

Question3: How much influence do University Agricultural Education programs have on the teaching practices of their graduates?

One construct was developed to measure the influence that University Agricultural Education programs have on agriculture teacher's teaching. A six-point rating scale (1=*completely* disagree to *6=completely* agree) was used to evaluate the construct. Table 4.6 provides the information about the Program Influence construct, including reliability (Cronbach's alpha), mean summated score for the construct, and the standard deviation. For the Program Influence construct the minimum mean score could be a six with the maximum summated mean score of 36 with higher values indicating that agriculture teachers perceived their Agricultural Education program as having an influence on their development as a teacher.

Cronbach's alpha was .849 and above, indicating that there is strong internal consistency within this construct. With the exception of Kentucky reporting that they slightly agreed, all other states slightly disagreed that the Agricultural Education program had an influence on their development as a teacher.

Table 4.6
Agricultural Education Program Influence on Teacher Development Construct Information

State	**Cronbach's alpha**	**Mean Summated Score per state**	**Standard Deviation**
Alabama	.870	22.15	6.35
Arkansas	.849	19.82	6.32
Florida	.909	20.90	7.43
Georgia	.921	19.87	7.72
Kentucky	.934	24.11	6.47
North Carolina	.883	22.97	6.87

In addition the researchers analyzed agriculture teachers' perceived access to resources to help them learn about global issues. All states reported that they slightly disagree that they have good contacts that are knowledgeable about global issues and they can turn to for help. In addition, aside from Florida and Kentucky (who both slightly agree) the states also slightly disagree that they know where to look for information about global issues that affect U.S. agriculture. In reference to the availability of resources to obtain more information about global issues, Arkansas, Florida and Kentucky slightly agree that there are enough resources, while Alabama, Georgia and North Carolina disagree.

Conclusions

This study demonstrates that the topic of global issues affecting U.S. agriculture is complex and cannot be addressed solely through national reform. Each University Agricultural Education program must be a leader in preparing their teachers to teach about global issues. The demographics of this study further reiterate the diversity of agriculture teachers within each state, which is reflected in the percentage of males vs. females who are teaching agriculture, the level of agriculture taught in school (middle, high or both), and the percentage of teachers who have traveled abroad. What is fairly consistent among them however is that very few teachers took a global agriculture class while at the University, regardless of how long it has been since they

graduated. This may indicate that despite the research urging Agriculture Education programs to internationalize, the programs have not have been successful in encouraging students to take an international agriculture class.

While respondents slightly agreed that they were prepared to teach about global issues affecting U.S. agriculture they also indicated that their Agricultural Education program did not address these global issues. This is a missed opportunity considering that agriculture teachers indicate that they are interested in learning about global issues that affect U.S. agriculture and believe it to be important. More importantly, they mostly agree that it is their responsibility to help their students understand global issues, which reinforces the notion that Agricultural Education has a duty to prepare students for a globalized workplace.

The agriculture teachers of this study indicated that they slightly disagree that their University Agricultural Education program has an influence on their teaching. They indicated that they slightly disagree with the notion that they refer back to what was taught in their Agricultural Education program, do not use the resources provided by their program, and do not teach topics that were addressed in their program more often. One respondent from Arkansas wrote "when it comes to teaching style you don't get that at a university you develop that by observing fellow teachers using what they do that will work for you and discarding the rest this is why workshops and conferences with round table sessions are so helpful national known speakers usually are a waste of time". This contradicts Cahill and Scamp (2003) findings, which state that subject matter and confidence level is influenced by what was taught during the student-teacher program. Further investigation beyond this study about program influence and Agricultural Education programs would be needed to draw any conclusions.

The respondents were slightly in favor of internationalization of the Agricultural Education program infusing global elements into the curricula, participating in an international class, and/or adding more global requirements to the curricula. In fact, respondents indicated that they slightly agreed to make some component of the agricultural education program that addresses global elements mandatory. The latter contradicts Sammons and Martin (1997) who stated that as long as no additional course requirements were imposed they were in favor of internationalization. One caution though is that respondents slightly disagreed that one class would be sufficient for them to be prepared to teach about global issues affecting U.S. agriculture indicating that internationalization will need to occur in multiple areas of the program.

Recommendations

Instrument Recommendations:

There are a couple of changes that are recommended for the instrument in order to make it more reliable and valid. The "Access to Resources" construct had questionable reliability, so it is recommended that further items be developed for this construct, and the construct be re-tested using SPSS. In addition, the questionnaire does not take into account teachers who did not graduate from an Agricultural Education program, or entered into the profession from a lateral direction so it is recommended that the questionnaire adjust its questions to take this factor into account.

Suggestions for Agricultural Education Programs To Prepare Agriculture Teachers

It is recommended that University Agricultural Education programs should concentrate their efforts on internationalizing their programs, either through infusion of global elements or creating a class that addresses global issues, rather than creating curricula that has more global

elements. The participants of this questionnaire responded slightly favorably to suggestions such as infusing global elements throughout the program, and making it a requirement to include a section of global issues into pre-service teacher classwork, but they disagreed that it is the Agricultural Education program's responsibility to create globalized curriculum. University Agricultural Education programs should focus on developing pre-service teachers content and pedagogy knowledge so that they can easily transfer the knowledge acquired about global issues into teaching practices (Shulman, 1986).

Further research should also be conducted as to the best way to internationalize Agricultural Education programs. There was mixed favorability about the method to internationalize the curricula, so it is suggested that a study be conducted among pre-service agriculture teachers as to their opinions about internationalizing the curricula. It is also recommended that further research be conducted about the program influence factor in teaching to determine if the results of this study were an outlier to existing literature.

It appears that internationalization will continue to be a topic of interest for the agriculture industry and academy in the future. Agricultural Education has a duty to continue preparing not only secondary students to be prepared to work in a globalized world, but also current and future agriculture teachers to teach their students about global issues that affect U.S. agriculture. Society has been changed by globalization, and Agricultural Education programs must not only change, but become innovators if they are to produce classroom teachers who are competitive in this new world (Moriba et al., 2012).

CHAPTER 5

CONCLUSIONS AND RECOMMENDATIONS

Introduction

There have been numerous literature citing that globalization has changed the agriculture industry and the industry needs employees who are globally competent and prepared to work in an internationalized setting (Navarro & Edwards, 2008; Sammons & Martin, 1997; Wingenbach, Boyd, Lindner, Dick, Arispe & Haba, 2003). According to Zhai and Scheer (2004), if students are to compete effectively in the globalized world they need to be prepared in global competence. The need to internationalize the agriculture curricula at both the secondary level and the University level has been recognized for approximately twenty years based on a review of the literature and numerous methods have been adopted, primarily focusing on faculty and curriculum development (Harder, Lamm, Roberts, Navarro & Ricketts, 2012; Navarro & Edwards, 2008).

However, very little research has focused on the agriculture (pre-service) teacher's knowledge and their development of global competence despite the National Council for Agricultural Education's (NCAE) 2009 report recognizing agriculture teachers as a key to preparing students to work in a globalized agriculture industry. In order to continue efforts to internationalize the University Agricultural Education Departments and prepare agriculture teachers to teach about global issues affecting U.S. agriculture, research needs to be conducted to determine how agriculture teachers acquire their knowledge of global issues, how knowledgeable they perceive themselves to be about global issues and how prepared they feel to teach about global agricultural issues. In addition, research needs to be conducted from the agriculture teachers' perspective as to the role University Agricultural Education programs should play in

preparing teachers. Specifically, what methods do current agriculture teachers suggest would be effective in preparing future teachers to teach about global issues that affect U.S. agriculture?

Study Objectives

The purpose of this study was to describe agriculture education teachers' self-perceived preparedness to teach about global issues that affect U.S. agriculture and the role of their University Agricultural Education program in this preparation. The research questions that guided this study were:

1. How do pre-service agriculture teachers construct their knowledge of global agriculture?
2. How interested and prepared are Agricultural Education teachers to help their students understand global issues affecting U.S. agriculture?
3. How much responsibility should the University Agricultural Education programs have in preparing agriculture teachers to teach their students about global issues affecting U.S. agriculture?
4. How much influence do University Agricultural Education programs have on the teaching practices of their graduates?

Review of Methods

A mixed methods approach was conducted for this investigation to increase validity and reliability by providing multiple sources of evidence. The qualitative data methodology provides rich contextual data which helps lead to greater understanding of an issue (Rogers & Goodrick, 2010) while the quantitative methodology expands the research beyond the scope of qualitative data. The results from the qualitative data were used to generate an instrument for the quantitative study.

Social constructionism was the theoretical framework used for the qualitative study because it allowed for multiple interpretations and, according to Andrews (2012) is less about making definitive claims and more about convincing arguments. A criterion sample was used to identify participants who had graduated from a University Agricultural Education program within six months of being interviewed. Six participants were interviewed and the data was transcribed and analyzed using inductive reasoning and thematic analysis.

The qualitative data was used to develop the quantitative instrument. A systematic process was used to analyze the data, and codes were assigned to data to label what emerged and acted as a summary. Themes were developed, supported by the codes. The themes were turned into an instrument constructs (which were variables that the researcher was trying to measure), and the codes were turned into questions that help measure the constructs. The different questions that were developed from the codes provided different ways to measure the variable and provided a more complete picture of the issue being measured. Five constructs were developed, each with a minimum of three questions per construct. The instrument went through a peer review process to reduce measurement error. A pilot study was conducted and the constructs were tested for reliability prior to the instrument being used for the quantitative portion of the study.

Using a stratified random sample, agriculture teachers in six Southern States (as defined by the American Association for Agricultural Education), (Alabama, Arkansas, Florida, Georgia, Kentucky, and North Carolina) were contacted and requested to take the online questionnaire. Descriptive statistics were used to analyze demographic information and the means of each construct. Constructs were analyzed using item analysis procedures. Each state was treated as a separate population and the data was analyzed accordingly.

Summary of Findings

How do pre-service agriculture teachers construct their knowledge of global agriculture?

This research question applies only to the qualitative portion of the study. All participants who interviewed defined global as being worldwide and impacting everyone as stated by participant 3:

"I include the U.S. globally but it will affect not only the U.S. but the entire globe, every other continent and country out there." (P3:55-56).

Participants constructed their knowledge of global agriculture in a variety of ways but they primarily fell into two categories: one way interaction and two way interaction. One way interaction was the most common and involved information that flows strictly from the source to the participant. Participants 5 and 3 both mentioned constructing their knowledge from one way sources such as media and the Internet:

"biggest source I have right now was, is I mean clearly just like the news" (P5: 235).

"Just reading, on the website some" (P3:106).

Two way interactions involved information flow between the source and the participant. Examples of two way interactions emerged from the following statements:

"when I was a student it was my professors. They kept us, you know, kept us up-to-date with what was going on (P4:174-176)"

"It was "Issues in Global Agriculture" was my class and we did it, and we did it with a satellite video chat" (P6:120)

Two way interactions occurred at the University level and manifested themself through classes on global agriculture issues, discussions among peers and with class professors, and global issues being brought up in class discussion.

How interested and prepared are Agricultural Education teachers to help their students understand global issues affecting U.S. agriculture?

Data from both the qualitative and quantitative studies indicated that agriculture education teachers were interested in helping their students understand global issues but are not as prepared as they could be. Participants from the quantitative study indicated that they slightly agree that they support teaching global issues in their secondary classrooms and mostly agree that they have a responsibility to teach global issues to their students. This was further reflected in a statement by P6:

"But I think that is pretty important. I think that as teachers we need to be continuing to strive for a greater understanding of world agriculture and current issues." (272-273)

Half of the states in the quantitative study (Alabama, Florida and North Carolina) indicated that they slightly agree that they are knowledgeable about global issues, while Arkansas, Georgia and Kentucky indicated that they slightly disagree. However, with the exception of Arkansas, the states indicated they were knowledgeable to teach global issues. This mirrors what was expressed in an interview by P3:

"If I had to right now I think that I could do it. I would definitely have to do little bit more research and find out more information in order for me to feel really comfortable but I could do somewhat of a little lesson right now." (238-240).

How much responsibility should the University Agricultural Education programs have in preparing agriculture teachers to teach their students about global issues affecting U.S. agriculture?

Both qualitative and quantitative studies indicated that the University Agricultural Education programs have some responsibility in preparing agriculture teachers. With the exception of Georgia, all states indicated that they slightly agree that the University has a responsibility to prepare students to teach about global issues that affect U.S. agriculture. Georgia teachers slightly disagrees that the University has responsibility to prepare students to teach about global issues. All the States (with the exception of Georgia) also slightly agreed that some component of the Agricultural Education program should have a mandatory global component to it. Georgia teachers slightly disagree that the Agricultural Education program should have a mandatory component. Requiring a global component to the Agricultural Education Program was also stated by P5:

"As far as a student-teaching program go I would definitely say require, I would say require that each student, each student teacher be required to do a set number of assignments, they have to create assignments that meet certain parameters for several different aspects and I think for that one make one where the students have to research global issues" (353-356).

There were mixed opinions about how the Agricultural Education program should prepare students. Some participants in the interviews indicated that they would prepare separate classes ("I think I gained the most from the one that completely devoted to global issues" (P5:371)) while others preferred infusing global issues throughout ("Maybe rope it into a small part of the class" (P1: 414)). In the quantitative study, the results indicated that most agriculture teachers felt that one international agriculture class was insufficient to prepare them to teach about global issues that affect U.S. agriculture in their secondary classes.

How much influence do University Agricultural Education programs have on the teaching practices of their graduates?

There were mixed results regarding the influence University Agricultural Education programs have on agriculture teacher's development. According to P6 "I could definitely say that program is very instrumental in developing teachers" (497-498). P5 also indicated the program had an influence on developing self-initiative when mentioning "this class led me to want to research that," (P5: 144) in reference to global issues. On the other hand, with the exception of North Carolina, all states indicated that they slightly disagreed that the program had an influence on their development as a teacher. North Carolina slightly agreed that the program had an influence on their development as a teacher.

Conclusions

The following conclusions were drawn from the two studies:

1. Current efforts by pre-service teachers to develop knowledge of global issues that affect U.S. agriculture lack the interaction necessary to develop a deeper understanding, in part because their knowledge acquisition is mainly one-way (i.e. media, Internet) as opposed to two-way interactions (i.e. classroom discussions). Students who took an international agriculture class, or participated in classroom discussion about global issues (two-way interactions) were better prepared to demonstrate the connections between global issues and U.S. agriculture.
2. Secondary agriculture teachers may not have the pedagogical knowledge to transfer their knowledge of global issues into their teaching.
3. Agriculture teachers felt they had a responsibility to teach about global issues to their students and were interested and willing to learn more about global issues. Agriculture

teachers also slightly agreed that they support teaching global issues in the secondary classrooms.

4. Pre-service and agriculture teachers are not opposed to internationalization efforts at the University Agricultural Education Department level but there are mixed opinions as to the best way to accomplish this. Some participants suggested infusion throughout agricultural elective classes, others suggested a separate class focusing on global agriculture issues, while others suggested requiring pre-service teachers to create lessons focusing on global issues for their student teaching experience.
5. A summary of the demographic data from this study revealed that the diversity of the agriculture teachers in each state indicate that University Agricultural Education programs will need to tailor their internationalization efforts to meet the agriculture teachers' needs, and as such, a national top-down approach may not be effective.
6. Based on results from the data, University students struggled to connect global issues to U.S. agriculture, indicating that that efforts need to be more blatant about making the connections between global and local agriculture more obvious, both in the elective classes within the College of Agriculture and the Agricultural Education classes.
7. There is not enough information at this time to determine why the results from qualitative and quantitative study contradicted each other regarding program influence and teacher development.

Discussion and Implications

Teachers indicated that they need further research to prepare to teach a lesson on a global issue relating to U.S. agriculture and are only slightly knowledgeable as to how global issues connect to local agriculture. This may indicate that agriculture teachers have a deficit in both

subject matter and pedagogical knowledge, both of which are necessary for teachers to be effective (Shulman, 1986). Subject matter knowledge acquisition is occurring in elective classes within Colleges of Agriculture as they internationalize the curricula, through practices such as infusing reusable learning objects (Dooley, Roberts, Navarro, Harder, Murphrey, Lindner, & Ricketts, 2011). However, global agriculture should also be taught in the educational (pedagogical) classes within the Department of Agricultural Education in order to ensure that students are acquiring the skills the transfer the subject matter into teaching practices.

Currently (pre-service) agriculture teachers are acquiring their knowledge mostly from media and news sources, but this is not sufficient for developing an understanding about how these global issues connect to U.S. agriculture. According to Wingenbach et al. (2003) students are not making the connection between what they are hearing about in the news and how this affects U.S. agriculture, supporting the notion that one way information flow such as through the media is not sufficient in developing an understanding of how global issues affect U.S. agriculture. Students who have a higher perceived comfort level for teaching subjects also have a higher perceived knowledge of the subject material (Wingenbach, White, Degenhart, Pannkuk & Kujawski, 2007). If agriculture teachers only feel slightly knowledgeable about global issues, as found in this study, and how they connect to U.S. agriculture, this can impact their teaching. Looking at global issues that affect U.S. agriculture from a systems perspective, as suggested by Acker (1999), incorporates both knowledge and teaching practices and is ideal in demonstrating the connections between global and local agriculture. During the interviews, when participants were pressed as to how they would teach global issues, they fell back onto teaching from a systems perspective, indicating that they are already pre-disposed to learning using this method.

University Agricultural Education programs need to be more proactive, particularly because each state and each program has a unique demographic of teachers, with different needs and demands. The National Council for Agriculture Education (NCAE) proposals of 2009 and 2011 provide a starting point for discussion for Agricultural Education programs, but the Agricultural Education programs will need to take the lead at the Department level and tailor internationalization efforts to suit their needs. One such way that Agricultural Education programs can tailor their program is to incorporate a mandatory global component. Agricultural Education programs may not encounter much student resistance if they become more proactive in internationalizing the program, based on results found in this study. Pre-service agriculture teachers and current agriculture teachers have both indicated that they are not opposed to internationalization efforts, going so far as to state they slightly agree that there should be a mandatory global requirement to the program. This contradicts findings by Sammons and Martin (1997) who indicated that students are not opposed to internationalization provided there were no additional requirements. This implies that attitudes may have shifted among pre-service and current agriculture teachers regarding making a global component mandatory within the Agricultural Education program. This possible shift in attitude should be capitalized by University Agricultural Education Departments and department heads should consider nominating faculty to lead this change.

Recommendations for Practice

1. Agricultural Education programs should focus on preparing pre-service teachers in both subject matter knowledge and pedagogy knowledge when determining methods to internationalize their Agricultural Education program. Development of global curriculum

may address subject matter content but also needs to address pedagogical knowledge as well.

2. Agricultural Education programs should look for opportunities to facilitate two way interactions to help pre-service teachers develop a deeper understanding of how global issues affect U.S. agriculture such as class discussions, guest speakers including question and answer periods, and discussions with professors involved in international research.
3. Three methods that can help facilitate change within Agricultural Education Departments involve: (1) emphasizing the responsibility and duty University faculty have in educating pre-service teachers about global issues so that they can prepare their secondary students (as stated by NCAE; top-down approach), (2) increasing dialogue between students and faculty about global issues and international agriculture (bottom-up approach), and (3) faculty members encouraging each other to internationalize the program and hopefully create a departmental norm focused on demonstrating to students the importance of global agriculture.
4. Few pre-service students took an international agriculture class despite efforts on the part of the University to internationalize the program. It is recommended that Agricultural Education advisors strongly encourage their advisees to add an international agriculture class to their studies or consider other international opportunities, such as study abroad or attend cultural events on campus.
5. Make a global component mandatory to the Agricultural Education program. This global component may take the form of an international class, preparing an internationally focused lesson plan for student-teaching, or teach a global lesson in the secondary classroom as part of their student-teaching.

6. Teach global issues using a systems approach (farm to table) in order to connect global issues to U.S. agriculture, which will assist in both subject matter acquisition and demonstrate a pedagogical method.
7. A study abroad could be designed specifically for Agricultural Education students that allows them achieve class credit specific to their major. Lack of time within their program of study and issues regarding class credit are major barriers for many students to study abroad and a specific Agriculture Education study abroad program may alleviate some of the barriers associated with study abroad.

Recommendations for Research

1. The quantitative instrument needs to be revised to take into account agriculture teachers who entered into the professional from lateral directions and did not graduate from an Agricultural Education program.
2. Responses on the instrument indicated that it lacked specificity at differentiating specific elements of the construct. A qualitative study should be conducted to determine other dimensions of the construct which were not measured in this study. The results from the qualitative study should be used to further revise the instrument. The instrument should be checked for validity and reliability before each use.
3. Further research needs to be conducted to measure the concept of program influence on agriculture teacher development. Research should explore different aspects of teacher development in relationship to program influence using both qualitative methods and quantitative methods.
4. Once revised, the instrument from this study should be re-examined for reliability and validity with other populations.

5. Further research needs to be conducted as to what pre-service teachers perceive as the most effective method to connect global issues to U.S. agriculture. Multiple suggestions were proposed during this study, and research should follow up these suggestions to determine the feasibility and effectiveness of each method in preparing agriculture teachers from a knowledge and pedagogical standpoint.
6. The quantitative data were analyzed using descriptive statistics, and further analysis should be conducted on the data. Comparisons between constructs, and demographic data and constructs should be conducted to provide more information about phenomena being studied.
7. Many of the studies mentioned in the literature review cited Wingenbach et al. (2003) as evidence that agriculture students are not knowledgeable about international agriculture; however this study is a decade old. Additional research should be conducted to compare the 2003 findings with current student perceptions.
8. Qualitative interviews should be conducted with agriculture teachers who have been in the profession for several years in order to compare the results from the qualitative interviews of the pre-service teachers.

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APPENDIX A

Subjectivity Statement

As an undergraduate student I wrote a thesis about creating an international program to be taught in high school agricultural classes. During my research, I noticed how predominately most of the research on the subject of internationalizing agricultural education focused on the collegiate level. I was alarmed by this because not everyone in the secondary agricultural classes goes on to higher education which means there is a large gap (a US Census Bureau Report of 2007 reports only 54% of the population has some college education) of the population that isn't reached regarding global issues in agriculture. During a National FFA Conference in Fall 2010 I was fortunate enough to sit on a meeting of the *Global Strategy Taskforce* and get a first-hand glimpse of how the industry is responding to the secondary agricultural programs lacking an international component. At the time my thoughts were still on my thesis, which focused on students, not teacher preparation of international agriculture.

The spring of 2011 I began my student-teaching experience at a rural middle school in Florida. This experience gave me firsthand knowledge of the struggles and difficulties agricultural educators have to contend with regarding curriculum implementation. As a "teacher" it was difficult to incorporate and satisfy the school district, state, and national standards into my lessons and every week it seemed like there was another standard that needed to be followed. It came to the point that I and many of my fellow student-teachers came to dread and resent any new curriculum overhaul that was being talked by the policy makers. As a result of this experience I realized that a curriculum overhaul would not be the most effective method preparing students for international agriculture and there would be challenges with integration of global elements to the curriculum (mainly due to the lack of materials or knowledge on the part

of the teachers already in the field). At this point, I shifted focus to the creation of curriculum materials that could easily be incorporated into the classroom. The goal was to have the pre-service teachers test the materials when they student-taught to assess their effectiveness. However, the more I thought about it the more I realized that there were a lot of unanswered questions about pre-service teachers' training, attitudes and capabilities to integrate international elements into the agriculture curriculum.

Being a global traveler myself (I have traveled to over twenty three countries in four continents, have participated in two agricultural study-abroad programs, and worked with the Foreign Agricultural Service in Peru as part of a team to assess curriculum overhaul at a University) and having a keen interest in this subject area it took a while for me to realize that I was unique compared to other agricultural educators in that I have a strong background in international agriculture. I have a strong bias about the importance of internationalizing the curriculum and did not stop to see if this view was shared by my peers. It will be difficult to disconnect my prior knowledge about international agriculture and I will have to be careful to position myself in my research in such a way that I do not allow my interpretations to be influenced unduly by my subjectivity.

Since I have recently gone through student-teaching myself the memories are still fresh in my mind and I can relate to the pre-service teachers are going through. This is very beneficial because it can allow me to keep in context what I am hearing and establish empathy with my participants. This perspective can also allow to me think of questions that I may otherwise have overlooked if I hadn't gone through the experience recently. Due to my experience, I have credibility that may help the pre-service teachers be more honest with me without having them

worry about repercussions if they spoke negatively about the agricultural education program (as I am a graduate student from another university).

Throughout the project it is critical that I do not let my experiences and interest in the subject matter bias the data I am collecting. When gathering data it would be very beneficial to have a partner that is not associated with this topic help fact check my interpretations of the data I am analyzing. I will need to also be aware that what I don't include is just as important as what I include in my report. I will have remember too, that although I have gone through the same experience the pre-service teachers are going to go through, it was with a different university program and not to let my assumptions about the sameness make me overlook the differences.

APPENDIX B

Qualitative Informational Consent Form

I, _____, agree to take part in a research study titled "A Qualitative Investigation of Agricultural Teacher's Preparation to Help Students Understand Global Issues Affecting US Agriculture", which is being conducted by Katrina Sharp from the Department of Agricultural Leadership, Education, and Communication, UGA, (305-965-8819) under the direction of Dr. Maria Navarro, Department of Agricultural Leadership, Education, and Communication (706-583-0225). My participation is voluntary; I can refuse to participate or stop taking part at any time without giving any reason, and without penalty. I can ask to have information related to me returned to me, removed from the research records, or destroyed.

Purpose of the Study
The purpose of this study is determine how interested and prepared student teachers are to help students understand global issues that affect US agriculture, and how they become prepared, if applicable. The responses of this study will be used to develop a survey as part of a Master's thesis.

Benefits
I will not benefit directly from this research.

Procedures
If I volunteer to take part in this study, I will be asked to participate in one 20 minute interview about how interested and prepared I am to help students understand global issues that affect US agriculture. There is a possibility that I may be contacted by the researcher for an additional 5 minutes follow-up questioning. *The interview will be audio-recorded unless I state otherwise.*

Discomforts or stresses
No discomforts or stresses are expected.

Risks
No risks are expected.

Confidentiality
My identity will be kept confidential to the extent provided by law. My name will be kept confidential and will not be reported. My interview responses will be assigned a coded number that corresponds to my name, which only the researcher or research advisor will have access to. The code and transcriptions will be stored on two different password-protected computers. My identifying information will only be used if follow-up questions are needed. All audio-recordings will be destroyed after transcription and I can request access to the transcription by contacting the researcher.

Further Questions:
The researcher will answer any further questions about the research, now or during the course of the project, and can be reached by telephone at: 305-965-8819.

I give my permission for the researchers to use an audio-recording device to record my interview.

Circle one: YES / NO. Initial _____.

My signature below indicates that the researchers have answered all of my questions to my satisfaction and that I consent to volunteer for this study. I have been given a copy of this form.

_____	_____	_____
Name of Researcher	**Signature**	**Date**

Telephone: _____ **Email: _____**

_____	_____	_____
Name of Participant	**Signature**	**Date**

Please sign both copies, keep one and return one to the researcher.

Additional questions or problems regarding your rights as a research participant should be addressed to The Chairperson, Institutional Review Board, University of Georgia, 629 Boyd Graduate Studies Research Center, Athens, Georgia 30602; Telephone (706) 542-3199; E-Mail Address IRB@uga.edu.

APPENDIX C

Interview Guide

- What do you consider to be global issues affecting US agriculture?
- Are you interested in helping your students learn about global issues affecting agriculture?
- How prepared do you feel you are to help your students understand how global issues affect US agriculture?
- If you feel prepared, what helped you (ex. classes in colleges, study abroad, reading the newspaper etc.)?
- What do you think would best prepare you to help your students understand how global issues affect US agriculture?
- What would you recommend to Universities on how they can prepare their student teachers to help students understand how global issues affect US agriculture?

APPENDIX D

Quantitative Informational Consent Form

I agree to take part in a research study titled "Investigating Teacher Preparedness to Teach Global Issues Affecting US Agriculture", which is being conducted by Katrina Sharp from the Department of Agricultural Leadership, Education, and Communication, UGA, (305-965-8819) under the direction of Dr. Maria Navarro, Department of Agricultural Leadership, Education, and Communication (706-583-0225).

My participation is voluntary; I can refuse to participate or stop taking part at any time without giving any reason, and without penalty or loss of benefits to which I am otherwise entitled. If I decide to stop or withdraw from the study, the information collected from or about me up to the point of my withdrawal will be kept as part of the study and may continue to be analyzed, unless I make a written request to remove, return, or destroy the data that can be identified with me.

Purpose of the Study
The purpose of this study is determine how interested and prepared agriculture teachers are to help students understand global issues that affect US agriculture, and how they become prepared, if applicable. The responses of this study will be used as part of a Master's thesis.

Benefits
I will not benefit directly from this research. However, the results of this study could potentially help guide Agricultural Education teacher preparation programs develop ways to prepare teachers to help students understand global issues affecting agriculture. As a result of this study Universities and Colleges will be able to design programs to better prepare Agricultural Education teachers to teach their students about global issues, which in turn will prepare students to enter better prepared into a competitive global agricultural industry.

Procedures
If I volunteer to take part in this study, I will take a survey that is 53 questions in length and has six sections: current knowledge of global issues affecting U.S. agriculture, teaching global issues affecting U.S. agriculture, University Agricultural Education program's effectiveness in teaching global issues affecting U.S. agriculture, availability of resources to teachers interested in teaching global issues affecting U.S. agriculture, University Agricultural Education program's influence in teaching, and a demographics section. This survey is expected to take about 20-25 minutes to complete.
Discomforts or stresses
No discomforts or stresses are expected.

Risks
No risks are expected.

Confidentiality

Due to the nature of the technology used, there could potentially be some information that could be traced/linked back to individual participants. Internet communications are insecure and there is a limit to the confidentiality that can be guaranteed due to the technology itself. However once the materials are received by the researcher, standard confidentiality procedures will be employed. Survey monkey responses that could be traced back to individuals via ip addresses will be destroyed and the data collected will remain on a password protected computer without individual identifiers. Demographic information will only be reported in aggregate form and will not be able to be traced back to an individual.
Further Questions:
The researcher will answer any further questions about the research, now or during the course of the project, and can be reached by telephone at: 305-965-8819 or trini@uga.edu.

Additional questions or problems regarding your rights as a research participant should be addressed to The Chairperson, Institutional Review Board, University of Georgia, 629 Boyd Graduate Studies Research Center, Athens, Georgia 30602; Telephone (706) 542-3199; E-Mail Address IRB@uga.edu
By completing the survey you are agreeing to participate in the research study.

Choose one:

I agree to participate in this research study.
I do not want to participate in this research study.

APPENDIX E

Dillman's Tailored Design Questionnaire E-mails

Hi!

My name is Katrina Sharp and I am an Agriculture Leadership, Education and Communication (ALEC) graduate student from the University of Georgia who is currently working on my thesis.

I wanted to give you some notice that *by the end of this week* you will receive an e-mail from me containing a link to a survey for my thesis. I am studying agriculture teacher's view about global issues that affect U.S. agriculture and how it relates to teaching. Your thoughts will be very valuable.

I would really appreciate it if you could take the survey when you receive the link. Because I consider your time valuable I wanted to let you know that the survey is expected to take 20 minutes. If you are not interested, please send a reply back to this e-mail indicating that you would not like to receive further e-mails from me so I may remove you from the e-mail list.

Thank you in advance for your help.

Sincerely,

Katrina Sharp
ALEC graduate student

Hello,

My name is Katrina Sharp and I am a graduate student in the Department of Agricultural Leadership, Education, and Communication (ALEC) at the University of Georgia. I received a degree in Agricultural Education in 2011 and am currently working on my thesis. I requested your e-mail address from (insert respective University Agricultural Education professor) because I would like to know if you would be interested in helping me by volunteering to participate in a study to determine how teachers view global issues that affect U.S. agriculture in relation to teaching.

If you are interested please click on the link below and fill out the survey. The first page will be a consent document that you must respond to before beginning the survey. It should take approximately 20-25 minutes to complete.

https://www.surveymonkey.com/s/preparingagricultureeducationteachers

If you would like to help me or have any questions you can contact me at trini@uga.edu or you can contact Dr. Navarro at mnavarro@uga.edu. I really appreciate you taking the time to consider my request. Your input is extremely valuable to me and I thank you in advance for your help.

Sincerely,

Katrina Sharp
trini@uga.edu
(305)965-8819

Hello,

This is Katrina Sharp, the ALEC graduate student who is working on her thesis. I just wanted to remind you that my survey is still open and I would really appreciate it if you could spare some time to fill it out. Your input is extremely valuable and could potentially help Agricultural Education programs in universities throughout the nation.

The link to the survey is:

https://www.surveymonkey.com/s/preparingagricultureeducationteachers

Thank you for your consideration. Your help with this research is really appreciated. If you are not interested, please send a reply back to this e-mail indicating that you would not like to receive further e-mails from me so I may remove you from the e-mail list.

If you have already completed the questionnaire, please know that I am really grateful to you, and I thank you for your time.

Have a great rest of the week.

Sincerely,

Katrina Sharp

APPENDIX F

Quantitative Instrument

1. Consent Informational Letter

I agree to take part in a research study titled "Investigating Teacher Preparedness to Teach Global Issues Affecting US Agriculture", which is being conducted by Katrina Sharp from the Department of Agricultural Leadership, Education, and Communication, UGA, (305-965-8819) under the direction of Dr. Maria Navarro, Department of Agricultural Leadership, Education, and Communication (706-583-0225).

My participation is voluntary; I can refuse to participate or stop taking part at any time without giving any reason, and without penalty or loss of benefits to which I am otherwise entitled. If I decide to stop or withdraw from the study, the information collected from or about me up to the point of my withdrawal will be kept as part of the study and may continue to be analyzed, unless I make a written request to remove, return, or destroy the data that can be identified with me.

Purpose of the Study
The purpose of this study is determine how interested and prepared agriculture teachers are to help students understand global issues that affect US agriculture, and how they become prepared, if applicable. The responses of this study will be used as part of a Master's thesis.

Benefits
I will not benefit directly from this research. However, the results of this study could potentially help guide Agricultural Education teacher preparation programs develop ways to prepare teachers to help students understand global issues affecting agriculture. As a result of this study Universities and Colleges will be able to design programs to better prepare Agricultural Education teachers to teach their students about global issues, which in turn will prepare students to enter better prepared into a competitive global agricultural industry.

Procedures
If I volunteer to take part in this study, I will take a survey that is 53 questions in length and has six sections: current knowledge of global issues affecting U.S. agriculture, teaching global issues affecting U.S. agriculture, University Agricultural Education program's effectiveness in teaching global issues affecting U.S. agriculture, availability of resources to teachers interested in teaching global issues affecting U.S. agriculture, University Agricultural Education program's influence in teaching, and a demographics section. This survey is expected to take about 20-25 minutes to complete.

Discomforts or stresses
No discomforts or stresses are expected.

Risks
No risks are expected.

Confidentiality
Due to the nature of the technology used, there could potentially be some information that could be traced/linked back to individual participants. Internet communications are insecure and there is a limit to the confidentiality that can be guaranteed due to the technology itself. However once the materials are received by the researcher, standard confidentiality procedures will be employed. Survey monkey responses that could be traced back to individuals via IP addresses will be destroyed and the data collected will remain on a password protected computer without individual identifiers. Demographic information will only be reported in aggregate form and will not be able to be traced back to an individual.

Further Questions:
The researcher will answer any further questions about the research, now or during the course of the project, and can be reached by telephone at: 305-965-8819 or trini@uga.edu.

Additional questions or problems regarding your rights as a research participant should be addressed to The Chairperson, Institutional Review Board, University of Georgia, 629 Boyd Graduate Studies Research Center, Athens, Georgia 30602; Telephone (706) 542-3199; E-Mail Address IRB@uga.edu

By completing the survey you are agreeing to participate in the research study.

1. Participation options:

◯ I agree to participate in this research study.

◯ I do not want to participate in this research study.

2. Knowledge of Global Issues That Affect U.S. Agriculture

For the purpose of this study "Agricultural Education program" refers to any classes you took at the college level (required or elective) when majoring in Agricultural Education.

The purpose of this section is to determine your thoughts about your current knowledge of global issues and how they might affect U.S. agriculture.

Please select the answer choice that best reflects your thoughts about each statement below:

2. I am knowledgeable about multiple (at least 3) global issues.

- ◯ Completely Disagree
- ◯ Mostly Disagree
- ◯ Slightly Disagree
- ◯ Slightly Agree
- ◯ Mostly Agree
- ◯ Completely Agree

3. I am knowledgeable about multiple (at least 3) global issues that affect U.S. agriculture.

- ◯ Completely Disagree
- ◯ Mostly Disagree
- ◯ Slightly Disagree
- ◯ Slightly Agree
- ◯ Mostly Agree
- ◯ Completely Agree

4. It is difficult for me to keep up with global issues.

- ◯ Completely Disagree
- ◯ Mostly Disagree
- ◯ Slightly Disagree
- ◯ Slightly Agree
- ◯ Mostly Agree
- ◯ Completely Agree

5. I visit websites or listen/watch/read the news more than two times a week to keep up with global issues.

- ◯ Completely Disagree
- ◯ Mostly Disagree
- ◯ Slightly Disagree
- ◯ Slightly Agree
- ◯ Mostly Agree
- ◯ Completely Agree

6. It is difficult for me to connect global issues to U.S. agriculture.

- ◯ Completely Disagree
- ◯ Mostly Disagree
- ◯ Slightly Disagree
- ◯ Slightly Agree
- ◯ Mostly Agree
- ◯ Completely Agree

7. I do not have the time to keep myself up-to-date about current global issues that could affect U.S. agriculture.

- ◯ Completely Disagree
- ◯ Mostly Disagree
- ◯ Slightly Disagree
- ◯ Slightly Agree
- ◯ Mostly Agree
- ◯ Completely Agree

8. Many of my University classes (in ALEC or elsewhere) addressed global issues that affect U.S. agriculture.

- ◯ Completely Disagree
- ◯ Mostly Disagree
- ◯ Slightly Disagree
- ◯ Slightly Agree
- ◯ Mostly Agree
- ◯ Completely Agree

9. I would like to learn more about global issues that affect U.S. agriculture.

- ◯ Completely Disagree
- ◯ Mostly Disagree
- ◯ Slightly Disagree
- ◯ Slightly Agree
- ◯ Mostly Agree
- ◯ Completely Agree

10. My peers (other Agriculture Education teachers) are more informed about global issues that affect U.S. agriculture than I am.

- ◯ Completely Disagree
- ◯ Mostly Disagree
- ◯ Slightly Disagree
- ◯ Slightly Agree
- ◯ Mostly Agree
- ◯ Completely Agree

11. I have no interest in keeping up-to-date with global issues.

- ◯ Completely Disagree
- ◯ Mostly Disagree
- ◯ Slightly Disagree
- ◯ Slightly Agree
- ◯ Mostly Agree
- ◯ Completely Agree

12. Please list 1-2 current global issues that affect U.S. agriculture.

3. Teaching Global Issues That Affect U.S. Agriculture

The purpose of this section is to determine your thoughts about teaching global issues that affect U.S. agriculture in your middle/high school Agriculture Education classes.

Please select the answer choice that best reflects your thoughts about each statement.

13. It is important to teach global issues in my middle/high school Agriculture Education classes.

- ◯ Completely Disagree
- ◯ Mostly Disagree
- ◯ Slightly Disagree
- ◯ Slightly Agree
- ◯ Mostly Agree
- ◯ Completely Agree

14. I feel I have a responsibility to help my students learn about global issues that affect U.S. agriculture.

- ◯ Completely Disagree
- ◯ Mostly Disagree
- ◯ Slightly Disagree
- ◯ Slightly Agree
- ◯ Mostly Agree
- ◯ Completely Agree

15. I am not interested in teaching global issues that affect U.S. agriculture to my students.

- ◯ Completely Disagree
- ◯ Mostly Disagree
- ◯ Slightly Disagree
- ◯ Slightly Agree
- ◯ Mostly Agree
- ◯ Completely Agree

16. I do not feel that it is important to have a new course in the Agriculture Education curriculum (e.g., International Agriculture course) that addresses global issues in my middle/high school.

- ◯ Completely Disagree
- ◯ Mostly Disagree
- ◯ Slightly Disagree
- ◯ Slightly Agree
- ◯ Mostly Agree
- ◯ Completely Agree

17. Middle/high school Agriculture Education classes should have more global issues incorporated into them.

- ◯ Completely Disagree
- ◯ Mostly Disagree
- ◯ Slightly Disagree
- ◯ Slightly Agree
- ◯ Mostly Agree
- ◯ Completely Agree

18. I feel well prepared to teach my students about global issues that affect U.S. agriculture.

- ◯ Completely Disagree
- ◯ Mostly Disagree
- ◯ Slightly Disagree
- ◯ Slightly Agree
- ◯ Mostly Agree
- ◯ Completely Agree

19. Assuming I had the knowledge of global issues I would still struggle to transfer that knowledge into my teaching.

- ◯ Completely Disagree
- ◯ Mostly Disagree
- ◯ Slightly Disagree
- ◯ Slightly Agree
- ◯ Mostly Agree
- ◯ Completely Agree

20. The Georgia Performance Standards (GPS) make it easy to incorporate global issues into the middle/high school Agriculture Education classes.

- ◯ Completely Disagree
- ◯ Mostly Disagree
- ◯ Slightly Disagree
- ◯ Slightly Agree
- ◯ Mostly Agree
- ◯ Completely Agree

21. It would be difficult for me to prepare lessons that help students realize how global issues affect U.S. agriculture.

- ◯ Completely Disagree
- ◯ Mostly Disagree
- ◯ Slightly Disagree
- ◯ Slightly Agree
- ◯ Mostly Agree
- ◯ Completely Agree

22. I do not know where to start when it comes to teaching global issues that affect U.S. agriculture.

- ◯ Completely Disagree
- ◯ Mostly Disagree
- ◯ Slightly Disagree
- ◯ Slightly Agree
- ◯ Mostly Agree
- ◯ Completely Agree

23. Even if Georgia Agriculture Education gave me a curriculum and instructional materials, it would be difficult for me to teach global issues that affect U.S. agriculture.

- ◯ Completely Disagree
- ◯ Mostly Disagree
- ◯ Slightly Disagree
- ◯ Slightly Agree
- ◯ Mostly Agree
- ◯ Completely Agree

4. The University's Agricultural Education Program and Global Issues

For the purpose of this study, "Agricultural Education program" refers to any courses you took at the college level (required or elective) when majoring in Agricultural Education.

The purpose of this section is to determine your thoughts about how effective your University's Agricultural Education program was in preparing you to teach about global issues that affect U.S. agriculture.

Please select the answer choice that best reflects your thoughts about each statement below:

24. The University Agricultural Education program did a poor job teaching about global issues that affect U.S. agriculture.

- ◯ Completely Disagree
- ◯ Mostly Disagree
- ◯ Slightly Disagree
- ◯ Slightly Agree
- ◯ Mostly Agree
- ◯ Completely Agree

25. The University Agricultural Education program should ensure pre-service Agricultural Education students are prepared to teach global issues that affect U.S. agriculture.

- ◯ Completely Disagree
- ◯ Mostly Disagree
- ◯ Slightly Disagree
- ◯ Slightly Agree
- ◯ Mostly Agree
- ◯ Completely Agree

26. One class about global issues at the University level would have been enough for me to feel prepared to teach about global issues that affect U.S. agriculture.

- ◯ Completely Disagree
- ◯ Mostly Disagree
- ◯ Slightly Disagree
- ◯ Slightly Agree
- ◯ Mostly Agree
- ◯ Completely Agree

27. If Agriculture Education teachers were asked to incorporate global issues into their middle/high school classes, the University Agriculture Education program should provide special classes on how to teach global issues in Agriculture Education the same way they do with other disciplines (e.g., horticulture for teachers, agricultural science for teachers).

- ◯ Completely Disagree
- ◯ Mostly Disagree
- ◯ Slightly Disagree
- ◯ Slightly Agree
- ◯ Mostly Agree
- ◯ Completely Agree

28. If global issues were to be taught in middle/high school Agriculture Education, future student teachers should prepare agriculture lessons with a section that has a global focus while in their Agricultural Education program.

- ◯ Completely Disagree
- ◯ Mostly Disagree
- ◯ Slightly Disagree
- ◯ Slightly Agree
- ◯ Mostly Agree
- ◯ Completely Agree

29. If global issues were to be taught in middle/high school Agriculture Education, it would be useful to infuse global issues throughout all the classes of the University Agricultural Education program.

- ◯ Completely Disagree
- ◯ Mostly Disagree
- ◯ Slightly Disagree
- ◯ Slightly Agree
- ◯ Mostly Agree
- ◯ Completely Agree

30. If global issues were to be taught in middle/high school Agriculture Education, the University Agricultural Education program should have a section where students have to research (ex. research project, write a paper, class project) a global issue affecting U.S. agriculture.

- ◯ Completely Disagree
- ◯ Mostly Disagree
- ◯ Slightly Disagree
- ◯ Slightly Agree
- ◯ Mostly Agree
- ◯ Completely Agree

31. If global issues were to be taught in middle/high school Agriculture Education, Agricultural Education students should be required to take a class about global issues affecting U.S. agriculture at the University.

- ◯ Completely Disagree
- ◯ Mostly Disagree
- ◯ Slightly Disagree
- ◯ Slightly Agree
- ◯ Mostly Agree
- ◯ Completely Agree

32. It is the responsibility of the University to provide ready-made resources to help me teach about global issues that affect U.S. agriculture.

- ◯ Completely Disagree
- ◯ Mostly Disagree
- ◯ Slightly Disagree
- ◯ Slightly Agree
- ◯ Mostly Agree
- ◯ Completely Agree

5. Resources to Teach Global Issues That Affect U.S. Agriculture

The purpose of this section is to determine your thoughts about resources available to teach global issues that affect U.S. agriculture.

Please select the answer choice that best reflects your thoughts about each statement below:

33. There are already a lot of resources available to me to learn more about global issues that affect U.S. agriculture.

- ◯ Completely Disagree
- ◯ Mostly Disagree
- ◯ Slightly Disagree
- ◯ Slightly Agree
- ◯ Mostly Agree
- ◯ Completely Agree

34. I already know where to look for information about global issues that affect U.S. agriculture.

- ◯ Completely Disagree
- ◯ Mostly Disagree
- ◯ Slightly Disagree
- ◯ Slightly Agree
- ◯ Mostly Agree
- ◯ Completely Agree

35. I would like to have a wide variety of resources (movies, guest speakers, websites, instructional materials, etc.) to help me teach global issues that affect U.S. agriculture.

- ◯ Completely Disagree
- ◯ Mostly Disagree
- ◯ Slightly Disagree
- ◯ Slightly Agree
- ◯ Mostly Agree
- ◯ Completely Agree

36. I have good contacts (people) that are knowledgeable about global issues that affect U.S. agriculture who I can turn to with questions.

- ◯ Completely Disagree
- ◯ Mostly Disagree
- ◯ Slightly Disagree
- ◯ Slightly Agree
- ◯ Mostly Agree
- ◯ Completely Agree

6. College Agricultural Education Program Influence

For the purpose of this study, "Agricultural Education program" refers to any classes you took at the college level (required or elective) when majoring in agricultural education.

The purpose of this section is to determine how your Agricultural Education program has influenced your teaching.

Please select the answer choice that best reflects your thoughts about each statement below.

37. My University Agricultural Education program has had a strong influence on my teaching style.

- ◯ Completely Disagree
- ◯ Mostly Disagree
- ◯ Slightly Disagree
- ◯ Slightly Agree
- ◯ Mostly Agree
- ◯ Completely Agree

38. My University Agricultural Education professors have had a strong influence on my teaching style.

- ◯ Completely Disagree
- ◯ Mostly Disagree
- ◯ Slightly Disagree
- ◯ Slightly Agree
- ◯ Mostly Agree
- ◯ Completely Agree

39. I often refer back to what was taught in my Agricultural Education program to determine my teaching strategies.

- ◯ Completely Disagree
- ◯ Mostly Disagree
- ◯ Slightly Disagree
- ◯ Slightly Agree
- ◯ Mostly Agree
- ◯ Completely Agree

40. I often refer back to what was taught in my Agricultural Education program to choose topics to teach in my classes.

- ◯ Completely Disagree
- ◯ Mostly Disagree
- ◯ Slightly Disagree
- ◯ Slightly Agree
- ◯ Mostly Agree
- ◯ Completely Agree

41. I use often the resources that I received from my University Agricultural Education program.

- ◯ Completely Disagree
- ◯ Mostly Disagree
- ◯ Slightly Disagree
- ◯ Slightly Agree
- ◯ Mostly Agree
- ◯ Completely Agree

42. I tend to address more often in my classroom teaching the topics that were emphasized in my University Agricultural Education program.

- ◯ Completely Disagree
- ◯ Mostly Disagree
- ◯ Slightly Disagree
- ◯ Slightly Agree
- ◯ Mostly Agree
- ◯ Completely Agree

7. Demographics

This section is to collect some demographic information about yourself. All answers will be kept confidential. You are not required to answer if you do not want to.

43. What is your gender?

- ◯ Male
- ◯ Female

44. In what state do you teach?

- ◯ Alabama
- ◯ Arkansas
- ◯ Florida
- ◯ Georgia
- ◯ Kentucky
- ◯ Louisiana
- ◯ North Carolina
- ◯ Oklahoma
- ◯ South Carolina
- ◯ Tennessee
- ◯ Texas
- ◯ Virginia

Other (please specify)

45. What University Agricultural Education program did you graduate from?

46. In what year were you born? (enter 4-digit birth year; for example, 1986)

47. How many years have you taught Agriculture Education?

48. How many years has it been since you graduated from your Agricultural Education program?

49. What level do you teach Agriculture Education?

- ◯ 9th to 12th grade (High School)
- ◯ 6th-8th grade (Middle School)
- ◯ Any combination of 6th-12th grade (Middle and High School)

50. Have you traveled outside of the U.S.? (business, vacation, study, mission, etc.)

- ◯ Yes
- ◯ No

If "yes" please add 1) how many trips, 2) why (study, vacation, mission trip, etc.), 3) country or countries visited, and 4) how long was each trip in the space below:

51. How often do you watch/read/listen [to] the news to keep informed about global issues during a week?

- ◯ Never
- ◯ Once a week
- ◯ Twice a week
- ◯ Daily
- ◯ Multiple times a day

52. Did you take a class that focused on international agriculture or global issues that affect U.S. agriculture when getting your University degree?

- ◯ Yes
- ◯ No

53. Is there anything else you would like to share that hasn't been covered?

8. Thank You

Thank you very much for your help. I hope you have a great rest of the week!

If you have any questions, you can contact me at trini@uga.edu.

Sincerely,

Katrina Sharp
Graduate Student at the University of Georgia