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Agricultural Education Abroad: Keeping Collaborative Course Efforts on the Right Track Using Formative Evaluation

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Agricultural Education Abroad: Keeping Collaborative Course Efforts on the Right Track Using Formative Evaluation

Abstract

A rising need to prepare students for a more global-oriented workplace has brought awareness of global issues to the forefront of agricultural education. Study abroad courses are increasing in popularity, and agricultural faculty members are being encouraged to develop and implement study abroad courses that will enhance student global competence. Prioritizing course creation over evaluation, faculty are currently collecting very little data that supports their success at reaching defined objective. As a result, study abroad courses are criticized for being unable to reach their designated objectives. Through the utilization of the formative evaluation process, data exhibiting student outcomes and recommendations for the long-term success of agricultural study abroad courses can be realized and used. The main purpose of this study was to identify the usefulness of formative evaluation by exploring its influence on a study abroad course. Changes to recruitment plans, enhanced communication, clearer educational objectives, and increased integration of experiential learning opportunities resulted. The study revealed when the formative evaluation process is followed, planning teams can make immediate changes which assist in the creation of high quality study abroad experiences.

Introduction

Awareness and a deep understanding of global issues have become more important in higher education due to the need to prepare students to compete for positions in an increasingly global economy (Navarro & Edwards, 2008). Student engagement in study abroad programs nationally is expanding at a rapid rate. Bhandari and Chow (2008) reported an 8.2% increase in study abroad participation from 2006 to 2007, a 143% increase within the last decade, and a 400% increase since 1985-86. In addition, more than 75% of parents with children in college believe study abroad is an important part of their child's education (NAFSA, 2006). While Jackson (2008) stated "an ever increasing number of universities are encouraging their undergraduates to participate in study abroad programs" (p. 350), college of agriculture faculty members have been criticized for putting very little emphasis on engagement in global societies (Persons, 2000). Students graduating from colleges of agriculture are perceived as having a "lack of knowledge of how globalization affects the United States and [the] international agribusiness environment" (Stephens & Little, 2008, p. 47). The need for an emphasis on global issues in agricultural undergraduate student curriculum is evident and study abroad opportunities are an ideal way to address this issue (Bhandari & Chow, 2008).

High quality study abroad programs are expected to give hands-on experiences to students in another country, and require faculty pull together complex, multi-disciplinary, diverse teams to develop courses that involve a lot of coordination (Trochim, Marcus, Masse, Moser, & Weld, 2008; United States Department of Agriculture, 2009). Study abroad efforts often cover multiple disciplines and involve the expectation that students will increase their knowledge of complex issues and the impacts of cultural differences within the fields of study (Trochim et al., 2008). As a result, study abroad faculty teams create large scale plans, identify multiple objectives, and

develop ambitious goals. Unfortunately, the goals set for study abroad courses are rarely reached and often fall short of their intended objectives (Koernig, 2007).

The complexity involved in study abroad courses makes it difficult to assess how well a course is designed and implemented, and leaves course developers with little knowledge of what they have done well and how to make programmatic improvements for future courses. In addition, course developers do not always have the time, inclination, or expertise to know how to conduct a proper evaluation (O'Sullivan, 2004). If evaluation data is collected, it is typically summative in nature and rarely looks at the process of implementation and student outcomes over time (Koernig, 2007). One of the key outcomes identified in the National Research Agenda (Doerfert, 2011) is the need to create accurate and reliable data that describes the quality and impact of agricultural education efforts. Therefore, a study examining how the utilization of formative evaluation can (1) provide data that describes the impacts of study abroad courses, and (2) focus on how the evaluation process can result in recommendations relevant to the long term success and sustainability of a study abroad course can assist in developing future direction for creating accurate and reliable data (Rossi, Lipsey, & Freeman, 2004).

Conceptual Framework

The conceptual framework for this study is based on the TOP Model of program development (Rockwell & Bennett, 1994) and Rossi et al.'s (2004) phases of formative evaluation. Using the TOP Model of program development as a basis for the phases of formative evaluation provided a strong conceptual foundation that allowed the researchers to examine how effective and thorough the evaluation plan was, and both were used to guide the methods and purpose of this study.

TOP Model

The TOP Model (Rockwell & Bennett, 1994) provides a framework for assessing how well a study abroad program is performing. Course planners are expected to progress through the TOP model from top left to top right (see Figure 1), detailing how the course will be developed and measured for performance (Rockwell & Bennett, 1994). Starting at the top, Rockwell and Bennett (2004) specify the course developer begin by thinking about the social, economic, and environmental (SEE) conditions they want to change as a result of the course. Examples of SEE conditions addressed by agricultural study abroad courses include economic globalization, agricultural sustainability, and global employability (Bhandari & Chow, 2008). In 2006, the U.S. Senate passed Resolution 308 encouraging initiatives to promote and expand study abroad opportunities. In this resolution the U.S. Senate recognized that "the security, stability, and economic vitality of the United States in an increasingly complex global age depend largely upon having a globally competent citizenry" (p. 2). Therefore, a solid study abroad course should designate the SEE condition changes that will assist in the development of globally competent citizens during the development process.

The second step in the model, practices, is the identification of desired changes in participant practice or behavior resulting from the course (Rockwell & Bennett, 2004). Examples of practice changes include student inclusion of cultural perspectives in future academic studies, communication with people from other countries, or engagement in international careers upon

graduation (Bhandari & Chow, 2008). The third step in the model identifies the desired changes in knowledge, attitude, skills, and aspirations (KASA) (Rockwell & Bennett, 2004). Examples of KASA changes include increased cultural awareness or acquisition of foreign language skills. When the Institute for the International Education of Students (IES) surveyed alumni of study abroad programs from 1950 to 1999, they found 90% reported their experience influenced them to seek out a greater diversity in friends, 87% believed it influenced their subsequent educational experiences, and 76% reported acquiring skill sets that influenced their career path (Dwyer & Peters, 2004) confirming study-abroad courses have assisted participants in KASA acquisition and changing their practices. Expectations are that high quality study-abroad courses are developed to make these changes (United States Department of Agriculture, 2009).

Figure 1. TOP Model (Rockwell & Bennett, 2004)

The fourth step, reactions, represents the type of satisfaction and engagement the program developer wants to get as a result of the program (Rockwell & Bennett, 2004). The reactions step is used to focus on basic human needs. Previous research has shown if basic human needs are not satisfied, deeper learning cannot occur (Forehand, 2005). Participants can react to many aspects of study abroad course designs including the facilities, the instructor, the transportation, and the activities. A high quality study abroad course should be developed with the participants comfort in mind. Traveling abroad can be frightening and overwhelming (Dwyer & Peters, 2003). The more the course developer can do to ensure positive basic need reactions, the higher the likelihood of positive learning outcomes (Maslow, 1943).

The fifth step, participation, is designed to encourage the course developer to think about who should participate, how many should attend, and what type of demographic characteristics they should embody (Rockwell & Bennett, 2004). If the incorrect audience is attracted to participate, learning outcomes will be diminished (Bennett, 1979). The sixth step, activities, focuses on how many and what type of activities are needed to implement the course. Study abroad courses are often planned with limited time and financial resources and overzealous developers will try to do too much (Harrison & Voelker, 2008). The final step, resources, includes the amount of time, costs, and staff/volunteer time needed to implement the course (Rockwell & Bennett, 2004). This is the bottom of the model, because without resources, the rest of the course could not exist.

Phases of Formative Evaluation

In order to assess course developer success using the TOP Model, an evaluation plan must be put in place. In formative evaluation, the information collected may relate to needs assessment, program design, implementation of the designated design, overall and specific impact, and/or efficiency (Rossi et al., 2004). The procedures followed typically include designing, conducting, and reporting evaluation results by focusing on delivering findings that are immediately useful (Patton, 2008). The five phases of formative evaluation include: (1) create a conceptual design for the course, (2) determine evaluation objectives, (3) create an evaluation design, (4) create useable results, and (5) communicate results with stakeholders (Rossi et al., 2004).

Over the past several decades, formative evaluation has become essential in all types of large program development efforts (Brown & Kiernan, 2000). Tim Weston (2004) stated that "for many efforts, evaluators help programs adapt themselves to their environments by making suggestions for altering program design" (p. 52). While conducting a formative evaluation on educational technology adaptation in a large school system, Weston found potential errors in the technology design. When fixed, the increased compatibility of the new technology to the equipment found in the schools led to a higher level of use immediately. Karbasioun, Biemans, and Mulder (2007) used formative evaluation in an international setting to examine how farmers in Iran perceived agricultural extension. As a result, they found the farmers felt short-term extension courses were most useful and that a more participatory approach to working together would increase the farmer's willingness to work with extension personnel (Karbasioun et al., 2007). They were able to make immediate changes, which increased their clientele and enhanced their program. Conducting a formative evaluation, in addition to the traditional summative evaluation, on a study abroad course can enhance programmatic delivery in the moment because it will guide planning teams on making informed decisions regarding the programmatic adjustments needed for positive changes to occur (Brown & Kiernan, 2000).

Purpose and Objectives

The purpose of this study was to explore the influence formative evaluation had on an agricultural study abroad course. The research objectives were to (1) identify how the formative evaluation process influenced the course development process and course implementation (2) identify the key outcomes of the course as identified by the students when assessed as part of the evaluation, and (3) identify how the key findings of the formative evaluation influenced future course development and implementation.

Methods

The impact of a formative evaluation (using both qualitative and quantitative methods) conducted on a study abroad course was examined. The course studied offered many characteristics typical of an agricultural study abroad course effort. It covered a variety of agricultural topics (soil science, plant science, animal science, and entrepreneurship) and included participants from multiple universities. The formative evaluation for the study abroad program was designed to assess the course planning process, course implementation, and

participant outcomes. The course included four pre-sessions and a three week experiential-learning based study abroad experience in Costa Rica.

Qualitative methods were used at several phases during the formative evaluation process to allow the researchers to develop an in-depth description of the factors explaining the present state of the planning and implementation of the course (Merriam, 1998). While offering an in-depth look, these methods lack breadth beyond the current environment, and therefore should only be used to gain insight into this specific situation (Hatch, 2002).

To gain an understanding of the conceptual design of the course a content analysis of the initial planning documents was conducted. Using theory, content analysis divides data into groups *a priori* based on predetermined items of analysis (Lincoln & Guba, 1985). The items of analysis used in this case were based on Rossi et al.'s (2004) formative evaluation theory to ensure the programmatic evaluation aligned with the TOP Model (Rockwell & Bennett, 2004). In addition, the lead instructor and another key team member were interviewed three months prior to the implementation of the course. The interviews were transcribed and content analyzed by the primary researcher. The themes, patterns, and relationships identified by the primary researcher were then discussed with two co-researchers to establish trustworthiness.

Quantitative Student Assessment Methods

A web-based survey research design combining data analysis of students' perceptions to specific items with content analysis of student writing samples was used to assess participant outcomes. More specifically, a pre-test, 7 week intervention, post-test design was used to collect student data. The majority of the questions on the pre-test and post-test were similar, allowing for comparisons over time to determine knowledge level change. All participants completed the pre-test and post-test for a 100% response rate.

The pre-test was administered one week prior to the start of the pre-sessions. Students were asked to rate their level of agreement (1 = *strongly disagree*, 5 = *strongly agree*) with eight statements designed to capture their level of knowledge related to knowledge gain objectives for the course. A knowledge gained scale score was calculated by taking the mean of the participant's responses to the eight items. The scale reliability was calculated at $\alpha = .79$. Demographic questions included university attended, major area of study, current educational status, gender, race/ethnicity, age, and where they grew up.

On the final day of the course in Costa Rica, a post-test was administered. On the post-test participants were asked to rate their level of agreement (1 = *strongly disagree*, 5 = *strongly agree*) with the same set of statements designed to capture the participants level of knowledge related to each of the objectives presented on the pre-test. Participants were also asked to rate the level of importance (1 = *no importance*, 5 = *great importance*) they associated with a set of experiential learning based items used throughout the course and then asked to rate the level they felt they experienced (1 = *did not experience*, 5 = *great degree*) the same experiential learning based items during the course. An importance scale score and an experienced scale score were calculated by taking the mean of the participant's responses to the seven items. The scale reliabilities were calculated at $\alpha = .92$ and $\alpha = .94$ respectively.

In addition, participants were asked to rate their overall satisfaction with the course according to a set of five bipolar adjectives. A satisfaction scale score was calculated by taking the mean of the participant's responses to the five items. The satisfaction index scale reliability was calculated at $\alpha = .95$. The post-test concluded with a series of open-ended questions based on each of the knowledge focused categories, how the participants would like to be involved in international programs in the future, and suggestions for future study abroad courses. Descriptive statistics were used to analyze all demographic and scale-type questions.

Results and Discussion

Objective 1. Influence of formative evaluation process on course development and implementation

The conceptual design of the course as suggested by Rossi et al. (2004) as part of the formative evaluation process was created through a content analysis of the initial program planning documents and interviews with key planning team members. Items of analysis included determining the needs of stakeholders, identifying outside influences, recognizing political pressures, defining the programmatic rationale, and identifying the target audience (Rossi et al., 2004). Funding for the study abroad course was provided by the USDA Higher Education grants program; therefore the primary stakeholder was the USDA. Additional stakeholders included taxpayers (since taxes fund the USDA Higher Education program), the three universities donating in kind services, and an agricultural supply company providing outside funds.

In order to identify the actual problem being solved, the evaluator compared the programmatic objective of the course uncovered through content analysis with those of the planning team, which were different and potentially problematic. In the course planning documents, the programmatic objective was a broad vision of making "a better world" where global collaboration will be easy and everyone will want to adopt sustainable practices. Arguments were made that undergraduates learning about sustainable practices in an international setting would be able to incorporate global perspectives into their future aspirations and work in the U.S. Specific programmatic objectives were not found.

The evaluator also interviewed two of the course key planning team members three months prior to the start of the program. An interview with one of the key team members uncovered a different rationale than that found in the course planning documents. This individual believed by infusing global curricula and international experiences into agricultural majors, agriculturally focused departments would attract more students. The interview with the lead instructor revealed a different perspective and rationale. In a previous visit to [University], she witnessed the hands-on learning and unique problem solving occurring there. She felt U.S. institutions lacked this experiential learning structure and, therefore, doing a disservice to students enrolled in their programs. In essence, she believed U.S. students were missing out on an experience that international universities were offering. She saw a need that could be addressed through a study abroad program that would provide U.S. students an opportunity to experience what is lacking at their current universities. A literature review conducted by the evaluator found many studies examining the practice of experiential learning which showed adult learners prefer to gain new

knowledge through experiential opportunities reflecting the principles of the learned information (Enfield, Schmitt-McQuitty, & Smith, 2007; Warren, 1995; Wulff-Risner & Stewart, 1997). In addition, research had shown the success educators had using experiential learning techniques as opposed to more traditional efforts (Knobloch, 2003).

During the interview with the lead instructor, it became apparent the agricultural supply company providing financial support wanted to benefit from the project. While broad education of sustainable practices was identified as an objective, the lead instructor wanted to be able to report a positive view of genetically modified cotton as an additional end result. After the conversation with the lead instructor, it became apparent the programmatic rationale needed to be clearly identified before going any further in the course planning and evaluation process.

In order to do so, the evaluator took steps to identify the KASA, practice, and SEE condition course objectives, an important part of course development, as outlined by Rockwell and Bennett (2004). Given the course developers were from multiple international institutions, the evaluator asked each of the team members to create educational objectives for their portion of the course. The evaluator expressed concern when 32 educational objectives were returned by the course planning team members. The objectives were pared down by the lead instructor and assembled to create an overall image of what the course would look like. The evaluator adjusted the statements into 23 measureable objectives the evaluation could be based on to determine overall success. With the team spread across several countries it was difficult for all members to meet at the same time via Polycom videoconferencing. In order to communicate information regarding the identified objectives, the evaluator created a narrated PowerPoint sent out via e-mail. It detailed the list of the objectives and described how they might be connected to the overarching goals of the course. Several members of the team reported that they only grasped the entirety of the course plan after reviewing the PowerPoint. Subsequently, the PowerPoint served as the basis for creating the individual learning experiences.

As part of the formative evaluation process, the evaluator developed an impact model and a process model. The impact model showed the path students would take through the KASA, practices, and SEE outcomes identified for the course. The impact model also identified important selection factors for the course including what the participants' demographic profiles should look like, such as year in school and educational major. The process model illustrated the interactions that would need to occur between the course instructors and students, identifying the requirements of the course and how the two groups influenced one another. Both models were shared with the planning team to clarify the conceptual programmatic plan. Through the use of these models, the planning team realized their student recruitment had been dramatically lacking, thereby explaining why the course was under-enrolled. As a result, a graduate student was employed to assist with recruitment. This individual spoke to several large survey college courses about the program and conducted educational sessions to recruit students. Through these efforts the initial enrollment of six was increased to 17 students.

Objective 2. Key findings of the formative evaluation

In the five phases of formative evaluation, Rossi et al. (2004) emphasizes how important it is for the evaluation design to address and measure identified objectives in a useable way. After

working to define the course objectives, the evaluator determined the goals of the student evaluation needed to assess: (a) student demographic characteristics in relation to the target audience (b) student reactions to the course (c) student knowledge gain related to content, and (d) student reactions to the delivery methods.

Demographics

The 17 participants recruited to take part in the course represented [University], [University], [University], and [University]. Eleven of the participants were female and six were male, ranging from 20 to 27 years of age. Thirteen participants were sophomore (12%), junior (41%), and senior (24%) undergraduate students. Four of the participants were graduate students. Eleven were White (non-Hispanic), three were Hispanic and the other three reported "other" as their ethnicity. Ten students grew up in a subdivision of a town or city, five grew up on a farm, one grew up in a rural setting, and one student grew up in the city. The students represented a variety of educational majors including agricultural business (2), agricultural education (2), animal sciences (2), biology (2), economics (2), plant medicine (2), biochemistry, environmental science, environmental and natural resources engineering, horticulture, and mathematics.

Reactions to the Course

Participants were asked to rate their overall satisfaction with the course according to a set of five bipolar adjectives presented as a five point scale with each adjective presented on an opposing side of scale. A mean score of the five items was calculated to determine the participants' overall perception of the course. Participants were generally unsatisfied with the quality of the course (see Table 1) as established by the less than satisfactory overall course quality score (M = 1.52, SD = 0.93). Student satisfaction also surfaced as one of the dominant themes when content analysis, using Weft-QDA (Fenton, 2006), was conducted on the open-ended questions. There was a consensus the overall course was worthwhile, but left room for improvement. Most students recognized the infancy of the course, being the first year it had been offered and relayed their overall enjoyment. Many students felt the concepts taught influenced their feelings about working in international agriculture. One student commented "I would love to continue working in international agriculture. There is so much out there and so much to learn." Another stated "I want to research and implement international agricultural programs as a career after my master's degree." However, students started the course with varying levels of knowledge related to plant disease, animal science, and soil sciences. As a result, many felt specific sections of the course were either too detailed or repetitive of the education they have received previously in the U.S.

Students also identified language barriers as an issue. Several commented on problems related to sections being taught in Spanish rather than English. As a result, bilingual students were expected to translate and spent more time translating than learning. There were a number of positive comments about the people, fellow classmates, and educators with emphasis placed on the value the participants put on the relationship building opportunities provided.

Table 1
Perceived overall quality of the course

	Mean	*SD*	*N*
Beneficial/not very beneficial	1.35	1.12	17
Positive/negative	1.47	1.02	17
Good/bad	1.53	1.02	17
Wise/foolish	1.59	0.94	17
Favorable/unfavorable	1.65	1.00	17

Knowledge Gain Related to Content

Participants were asked to respond to questions about their level of knowledge related to subject matter covered in the course including their cognitive thinking styles, plant medicine, agronomics/crops, animal nutrition, environmental/soils, entrepreneurship, and agricultural sustainability on the pre-test and post-test. The overall perceived knowledge index score prior to the course (M = 2.91, SD = 0.54) was slightly lower than the overall perceived knowledge index score (M = 3.07, SD = 0.70) after the course. When knowledge items were reviewed individually, the results indicated there were positive mean differences in five of the eight knowledge level areas (Table 2). The largest mean differences occurred in participant knowledge of gastrointestinal physiology of farm species (0.88) and knowledge of the requirements of good soil stewardship (0.53). Participants may have over-estimated their knowledge levels prior to the course, resulting in the negative mean differences.

Table 2
Perceived student knowledge gain

Statement	*Pre*	*Post*	*Difference*
My current level of knowledge of the gastrointestinal physiology of farm species is very high.	2.18	3.06	0.88
My current level of knowledge of the requirements of good soil stewardship is very high.	2.59	3.12	0.53
My current level of knowledge of agricultural sustainability is very high.	3.29	3.71	0.42
My current level of knowledge of plant disease diagnosis is very high.	2.24	2.47	0.23
My current level of knowledge of natural pre-harvest food safety intervention strategies is very high.	2.53	2.71	0.18
My current level of knowledge of correct plant management practices is very high.	3.06	2.82	-0.24
My current level of knowledge of the concepts critical to an agricultural feasibility plan is very high.	3.29	3.00	-0.29
My current level of knowledge in regards to my cognitive thinking style is very high.	4.12	3.65	-0.47

Note: Scale: 1 = *Strongly Disagree*, 2 = *Disagree*, 3 = *Neither Agree or Disagree*, 4 = *Agree*, 5 = *Strongly Agree*

Participant knowledge gained as a result of the course also surfaced as one of the dominant themes when content analysis, using Weft-QDA (Fenton, 2006), was conducted on the open-ended questions. The responses could be assigned to one of four primary subject matter areas including plant disease, animal nutrition, soil science, and entrepreneurship. Within plant disease, the most common pieces of information gained included an understanding of the major categories of plant diseases and how they are transferred, identifying enations created by leaf diseases, effects of nitrogen deficiency, differences between fungi and bacteria, disease diagnosis, insects that are common pests in Latin America, and the basic signs of plant disease. For animal science, the identified subject matter recollected included livestock dietary requirements, the importance of nitrogen and phosphorus ratios, types of forages fed to livestock species, and the differences between ruminant and non-ruminant animals. Within soil sciences, the identified items included understanding the soils of Costa Rica, defining layers and horizons, understanding the importance of drainage, water and nutrient retention, concerns regarding pH levels, and how to diagnose nitrates. For entrepreneurship, the majority of information learned included business plans, the problems and solutions to identify when starting a business, and the efficiency of the concept of sustainability in business planning.

Reactions to Delivery Methods

Participants were asked to rate the level of importance and level of experience they associated with a series of items related to delivery methods used during the course. Participants reported an overall higher level of importance (M = 4.42, SD =0 .72) than level of experience (M = 3.09, SD = 1.02) with the items. When the items were reviewed individually, the results indicated there were negative mean differences between the level of importance associated with the items and the degree to which the items were experienced. The largest mean differences occurred with respect to having an [University] student as a mentor/partner (-1.77) and communication with [University] students (-1.58) (see Table 3).

Table 3
Level of importance versus degree experienced

Item	Importance	Degree	Difference
Having an [University] student as a mentor/partner	4.12	2.35	-1.77
Communication with [University] students	4.29	2.71	-1.58
Friendship with [University] students	3.94	2.71	-1.23
Communication with Latin American farmers	4.59	3.41	-1.18
Hands on learning experiences	4.82	3.65	-1.17
Learning about the perspectives of Latin American farmers	4.29	3.06	-1.17
Actual experience on a Latin American farm	4.88	3.76	-1.12

Note: Scale: 1 = *No Importance*, 2 = *Low Importance*, 3 = *Average Importance*, 4 = *High Importance*, 5 = *Great Importance*

Objective 3. How key findings influenced future course development and implementation

A review of the quantitative evaluation results from the course revealed useful information showing that a good evaluation design is one that yields credible and useful information (Rossi et al., 2004; Patton, 2008). With only 17 total participants the planning team was unable to reach

the course capacity of twenty. Only 13 of the students represented the defined target audience. Two of the students were not from the identified institutions, several of the students did not come from agricultural majors, and four were graduate students rather than undergraduates. The importance of student recruitment and enrolling the proper audience were supported by the participants lack of satisfaction with the course due to information taught being either to basic or too complex for the students' initial level of knowledge.

When overall knowledge index scores were compared, there was a small difference of +0.16 between the mean score on the pre-test and post-test. This represents an insignificant change in knowledge levels. The lack of knowledge index score change supported the argument that the amount of educational objectives created by the course planning team was unrealistic. The number of educational objectives needed to be paired down to target specific goals in order to show knowledge gain in future courses.

Given the results of the assessment, the course developers found the delivery methods planned were appropriate for the audience considering the level of importance expressed. This was supported by the emphasis the participants placed on their enjoyment surrounding the personal relationships they built while studying abroad. However, the course developers were unable to deliver the educational experiences at the level the participants were expecting. Placing an emphasis on these items in future courses will likely enhance participant satisfaction and knowledge gain.

Conclusions

The formative evaluation process had an impact on both the program planning and implementation process of the study abroad course. Initially, content analysis of the course planning documents and the interviews with key planning team members helped the planning team clarify what they wanted the students to learn. This is consistent with Rossi et al.'s (2004) framework which states that clarifying the program's plan is imperative to its success. In this case, had the programmatic plan not been clarified, clear course objectives, known to be essential in proper program development, would not have been identified (Rockwell & Bennett, 2004).

Unfortunately, the course planning team created too many objectives based on the large-scale, multi-disciplinary plan they had put together (Trochim et al., 2008). Instead of prioritizing educational efforts, the planning team members were spread thin, unable to achieve the knowledge gain desired, falling short of their intended objectives. Creating too many ambitious goals is a common mistake when creating study abroad programs (Koernig, 2007). This finding supports the need for the formative evaluation framework (Rossi et al., 2004) which identifies the creation of clear, unambiguous, achievable objectives as a necessity when program planning.

Once the objectives were identified, the PowerPoint created by the evaluator was an effective communication tool for the multi-institutional, culturally diverse team. The PowerPoint was used to focus the team on creating their separate units based on a common goal offering recommendations relevant to long-term success (Rossi et al., 2004). The development of impact and process models also had an immediate effect on program planning by showing the need for enhanced recruitment. The formative evaluation process allowed the evaluators to help the

course planners adapt to their environment by suggesting programmatic alterations, consistent with Weston's (2004) experiences when using formative evaluation methods in schools.

While the planning team was unable to reach full capacity, their initial enrollment was increased from six students to 17 when recruitment was emphasized after reviewing the models. Again, the course planning team was unaware that accepting participants outside of the target audience would create issues. The TOP Model clearly indicates the participants must be clearly defined to ensure the program will operate correctly (Rockwell & Bennett, 2008). The formative evaluation results revealed that having the wrong participants resulted in lower knowledge gains than expected and a lower level of satisfaction due to participants feeling learning experiences were too simple or too difficult. The formative evaluation process offered insight into the fundamental issues with the study abroad course, offering the planning team solutions that will assist in future study abroad course planning and implementation.

Lastly, the participants placed a high level of importance on experiential learning opportunities. At the same time, they reported that they did not experience the activities at the level of importance they associated with them. In order to engage learners and enhance the level at which they can absorb knowledge, experiential learning opportunities should be incorporated with knowledge objectives in mind as noted by Rockwell & Bennett (2004). The formative evaluation results suggest that the course planning team needs to include field work instead of lectures and increase the amount of time participants spend working with international partners on subject matter important to the course. Considering the intended outcomes of study abroad courses in general are student inclusion of cultural perspectives and increased communication with people from other countries (Bhandari & Chow, 2008), the formative evaluation process of this course identified the types of opportunities study abroad course developers need to implement to achieve enhanced global competence as an outcome.

Implications & Recommendations

This study shows that using the formative evaluation process can be beneficial when working on a diverse, international effort. When followed, course planners do not have to wait for suggestions regarding changes and adaptations. With formative evaluation issues are not only identified at the end of the course, but while course planning is occurring. Adding this insight gives the planning team an opportunity to fix a problem as it occurs, thereby increasing their chances of success in reaching course objectives. In addition, planning teams have the benefit of a detailed report at the conclusion of the evaluation.

On many occasions, evaluation materials are only used when it is too late to make adjustments. Study abroad course evaluators should consider how formative evaluation recommendations can be framed to emphasize use rather than passing judgment so they can be implemented immediately by the team. This should occur during the planning process to enhance and alter programs while there is still time to do so. In addition, making small adjustments identified by the formative evaluation process in coming years, long-term success and sustainability of study abroad courses can be achieved.

A study evaluating a single multi-year course over time, taking an in-depth look at how the provided recommendations from a formal formative evaluation actually affected future programming and evaluation choices would be useful. Specifically tailoring a study to examine the amount of change to the educational objectives, impact model, process model, and evaluation design prior to and after the formative evaluation process would be ideal.

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A Comparison of Job Stressors Experienced by Male and Female Beginning Agriculture Teachers

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A Comparison of Job Stressors Experienced by Male and Female Beginning Agriculture Teachers

Abstract

The purpose of this study was to determine if stressors differ among new teachers based upon gender. Male and female participants were similar demographically in that average respondents for both groups were married, between 25 and 34 years old, had bachelor's degrees, lived in rural areas, and have taught agricultural education from one to five years. Participants were asked to indicate stress levels associated with job responsibilities constructs using a Likert scale where 1=least stressful and 5=most stressful. Gauging differences in stress associated with several different constructs of stressors, there was little difference between groups. Stressors included in the FFA construct held similar levels of stress for male and female participants except for the item: FFA responsibilities, which was significantly more stressful to women respondents (M=3.49) than men respondents (M=2.73). Two stressors related to time management emerged as significantly more stressful to female ag teachers; demands of class load/time and overburdened workloads. The constructs related to finances, student interactions, curriculum development and administrative support did not hold any items with significantly different stress levels for male and female agriculture teachers. While respondents indicated similar perceptions of stress related to job responsibilities, in the instances where differences did occur, female teachers were the group which felt increased stress levels. The broad nature of the items of greater stress indicated that emphasis on time management skills and stress management techniques would be beneficial for female agriculture teachers, in particular.

Introduction

Most jobs have some level of occupational stress, but some jobs are more stressful than others (Johnson, Cooper, Cartwright, Donald, Taylor, & Millet, 2005). While early research determined the presence of occupational stress, it failed to explore if the phenomenon of stress existed in specific job environments (Haw, 1982). Since then, multiple researchers have confirmed that the occupation of teaching is a high stress profession (Kyriacou, 2000; Johnson et al., 2005; Klassen and Chiu, 2010; Liu & Ramsey, 2008).

Teachers' Stress

Teaching is one of the oldest professions and can be linked back to ancient theologists such as Socrates and Aristotle in ancient Greece. Researchers have studied the student/teacher relationship, the theory of self-efficacy, and different teaching styles. However, it was not until the mid-1970s that research studies began to explore and define the concept of teachers' stress (Kyriacou, 2000). Teachers' stress is defined as "the experience by a teacher of unpleasant, negative emotions, such as anger, anxiety, tension, frustration, or depression, resulting from some aspect of their work as a teacher" (Kyriacou, 2001, p. 28).

Johnson, et al. (2005) conducted a study to compare the levels of occupational stress among 26 diverse occupations. Of the 26, six of the occupations were identified as

being high stress. The occupation of teacher was listed as an extremely high stress occupation (second in the study after ambulance worker) with teacher participants scoring low on physical and psychological well-being as well as having a low level of job satisfaction. Klassen and Chiu (2010) studied teachers and specifically looked at the levels of self-efficacy as compared to levels of stress. Their study found that teachers who had low self-efficacy also exhibited high levels of teachers' stress and low levels of job satisfaction.

There are many factors that can contribute to teachers' stress including high levels of pressure, extreme demands, a heavy workload, and the lack of time to adequately prepare for occupational duties (Kyriacou, 2005; Johnson, et al., 2005). Liu and Ramsey (2008) also cite poor work conditions, little time to plan or prepare curriculum, and heavy teaching loads as additional factors that have the potential to increase levels of teachers' stress. Furthermore, stress can be caused by personal interactions with stakeholders such as administrators, colleagues, students, and parents (Klassen & Chiu, 2010). Legislators also contribute to the phenomenon of teachers' stress with an increased emphasis on standardized testing. Consequently, many teachers are overburdened with the heavy amount of paperwork they are now required to complete (Johnson, et al., 2005). All of these stressors have the potential to increase teacher turnover by decreasing an individual's level of satisfaction with teaching (Liu & Ramsey, 2008).

Occupational stress can lead to the phenomenon of burnout (Antoniou, Polychroni, & Vlachakis, 2006; Timms, Graham, & Caltabiano, 2006). Burnout is common in jobs where the work is focused on people (Mearns & Cain, 2003). It is emotional exhaustion that is typically a response to being a victim of chronic stress (Mearns & Cain, 2003). Burnout consists of three elements: emotional exhaustion, depersonalization, and the sense of a lack of personal accomplishment (Johnson, et al., 2005). New teachers are particularly susceptible to burnout because of the high demands they may face (Mearns & Cain, 2003). Burnout can be detrimental to an organization because it can eventually lead to widespread employee turnover (Antoniou, et al., 2006; Johnson, et al., 2005).

Teachers' Stress and Gender

While the concept of teachers' stress was being explored in the mid-1970s, the early researchers failed to investigate if the levels of teachers' stress existed equally between males and females (Haw, 1982). Okpara, Squillance and Erondu (2005) conducted a study with over 1,000 faculty members from 80 different universities within the US. This study found that women in higher education report higher levels of stress related to their job when compared to their male colleagues. Furthermore, the women in this study also reported lower levels of job satisfaction when compared to their male counterparts (Okpara, et al., 2005). Female faculty members cited lower levels of job satisfaction based on a variety of factors including supervision, pay, and opportunities for professional growth (Okpara, et al., 2005). These findings are consistent with the study conducted by Antoniou, Polychroni & Vlachakis (2006). Antoniou, et al. (2006) studied secondary education teachers in Greece and found that female teachers experienced higher level of stress, heavier workloads, more frustrations with student progress, and an increase in emotional exhaustion when compared to male teachers within the same educational system.

In both studies, the higher levels of teachers' stress was attributed to the fact that females typically have to balance family and professional responsibilities more so than their male counterparts (Okpara, et al., 2005; Antoniou, et al., 2006). This is not a new concept as Haw (1982) claimed that women have a very different working role than their male counterparts, in that the female working role often spans both work and home-related duties. Other reasons for higher teachers' stress levels among females can be attributed to the results of a heavier workload, demands for increased student progress, and behavioral difficulties in the classroom (Antoniou, 2006).

Theoretical Framework

Research by Maslow and Herzberg more than 50 years ago suggest that satisfied and stress free employees tend to be more productive, creative, and committed to their employers' (Alshallah, 2004). Unfortunately, to be truly stress free in an organization is an impossibility (Moorhead, 2007).To measure stress, Quick and Quick (1984) developed a model of organizational stressors and the consequences of the stressors on the individual and the organization.

Quick and Quick (1984) identified four types of organizational stressors: task demands, physical demands, role demands, and interpersonal demands. Task demands are stressors specifically associated with the job a person performs. These include occupation typology, job security, and overload (having more work assigned than the person is capable of completing). Physical demand stressors include the physical requirements of the job including temperature of working conditions, strenuous labor, office design and space, and work hours. Role demand stressors are identified as the set of expected behaviors, written or insinuated, associated with the position including role ambiguity, role conflict, and role overload (expectations for success exceed the capability of the individual). Group pressures, leadership style of the manager/superior, and personality conflicts are identified by Quick and Quick as interpersonal demands and potential stressors. Individual stressors or life stressors are categorized as life change and life trauma.

Quick and Quick (1984) conclude that each type of stressor has unique consequences. These consequences can impact the individual as well as the organization. Behavioral, psychological, and medical are individual consequences of both organizational and life stressors. Organizational consequences including burnout and organizational mortality as well as organizational decline are detriments caused by organizational and life stressors.

The current research defines teachers' stress and explores the difference in the level of teachers' stress between males and females. For purposes of this study, the researchers have identified "task demands" stress as defined by Quick and Quick (1984). However, the research team found limited research regarding teachers' stress (task demand) and gender differences among new agricultural education teachers.

Purpose

The purpose of this study was to determine if stressors differ among new teachers based upon gender. This study looked at six constructs of stressors and compared

responses from male and female participants to see if differences existed. The following objectives guided this study:

1. Describe participant demographics for both male and female respondents;
2. Determine if differences exist in how men and women perceive stressors related to FFA;
3. Determine if differences exist in how men and women perceive stressors related to time;
4. Determine if differences exist in how men and women perceive stressors related to financial constraints;
5. Determine if differences exist in how men and women perceive stressors related to student interactions;
6. Determine if differences exist in how men and women perceive stressors related to curriculum development; and
7. Determine if differences exist in how men and women perceive stressors related to administrative support

Procedures

The target population of this study was agriculture teachers in [state] who had been teaching for one to five years. A list of all the new and beginning agricultural education teachers in [state] was obtained from the [state] department of education staff and a total of 142 agriscience teachers fit the criteria for this study. In order to reach a large number of potential participants, a convenience sample of beginning teachers in attendance at the [state] Vocational Agriculture Teachers Association Summer Conference was selected to participate. A total of 77 questionnaires were collected which accounted for 54% of the total population being studied. Due to the use of a convenience sample and a single attempt to collect data, no attempt was made to address non response.

The questionnaire, developed by a panel of experts consisting of university faculty and a graduate student, compiled 34 stressors into six constructs. Participants were asked to indicate the level of stress for each stressor using a 5-point Likert-type scale with 1 being least stressful and 5 being most stressful. The instrument also asked for selected demographic data and information on support available from local school districts, state staff, and university faculty, which is not reported in this study. As previously stated, paper copies were distributed to participants during the [state] Vocational Agriculture Teachers' Association Summer Conference and collected upon completion. Data were coded and analyzed using SPSS 14.0 software. Frequencies and percentages were calculated and reported for demographic data. A two-tailed independent t-test was used to compare means for each of the stressors. The alpha level was set *a priori* at .05.

Results/Findings

Objective 1

Objective one sought to describe the participant groups in this study. The average male participant was a Caucasian between 25 and 34 years of age with a bachelor's degree,

lived in rural areas and were married. The average female participant was a Caucasian between 25 and 34 years old with a bachelor's degree, lived in rural areas and were married (Table 1).

Table 1

	Male		Female	
Characteristic	*F*	%	*F*	%
Ethnicity				
Caucasian	37	100	38	97
African-American			1	3
Age				
<25	10	27	9	23
25-34	22	60	24	62
35-44	3	8	4	10
45-54	2	5	1	3
55+	0	0	1	3
Level of Education				
Bachelor's	19	51	26	67
Master's	12	32	12	31
Specialist	5	14	1	3
Doctorate	1	3		
Marital Status				
Married	21	57	30	77
Unmarried	15	43	9	33
Size of Community				
Rural	23	62	25	64
Suburban	12	32	11	28
Urban	2	5	3	8

Objective 2

There were seven stressors included in the FFA related stressors category. Of the seven stressors in this construct, there was a significant difference between males and females on only one. While the t-values for the specific FFA activity stressors did not indicate any significant differences in means, the more general stressor of FFA Responsibilities was found to be significant with a t-value of -2.65 (p= .01). Table 2 summarizes the comparison of all seven FFA related stressors.

	Male		Female			
FFA Related Stressors	*M*	*SD*	*M*	*SD*	*T*	*P*
FFA responsibilities	2.73	1.17	3.49	1.32	-2.65	0.01**
Planning FFA banquets	2.76	1.16	3.21	1.24	-1.62	0.11

Supervising SAE projects	2.62	0.95	2.79	1.00	-0.77	0.44
Preparing FFA proficiency applications	3.40	1.46	3.24	1.50	0.45	0.66
Developing SAE opportunities for students	2.97	1.07	2.77	1.11	0.82	0.42
Organizing fundraisers	2.97	1.07	3.44	1.10	-1.78	0.08
Organizing student internships	2.21	1.24	2.51	1.07	-1.09	0.28

Note. Scale: 1= Least stressful, 5= Most stressful
**p<.01

Objective 3

Objective three sought to determine if differences existed in male and female teachers' perceptions of time related stressors. There were seven stressors included in the time stressor construct and significant differences existed for two of the stressors. Demands of class load/time and overburdened workloads were the significant stressors with t-values of -2.00 (p = .05) and -2.71 (p = .01) respectively (Table 3).

Table 3

	Male		Female			
Time Related Stressors	*M*	*SD*	*M*	*SD*	*T*	*p*
Time Constraints	3.49	1.15	3.97	1.04	-1.95	0.06
Demands of class load/time	3.20	1.05	3.67	0.96	-2.00	0.05*
Inadequate class length	2.19	1.13	2.13	1.13	0.24	0.81
Class scheduling	2.50	1.08	2.87	1.10	-1.47	0.15
Overburdened workloads	3.19	1.08	3.87	1.09	-2.71	0.01**
Excessive paperwork	3.24	1.19	3.54	1.02	-1.16	0.25
Teacher meetings/conferences	1.73	0.84	1.87	1.10	-0.63	0.53

Note. Scale: 1= Least stressful, 5= Most stressful
* p<.05, **p<.01

Objective 4

Objective four sought to determine if differences existed in male and female teachers' perceptions of financial stressors. There were three stressors included in this construct and significant differences were not found for any of the three (Table 4).

Table 4

	Male		Female			
Financial Stressors	*M*	*SD*	*M*	*SD*	*t*	*p*
Inadequate school facilities	2.35	1.27	2.21	1.00	0.56	0.58
Lack of proper teaching materials	2.35	1.18	2.33	1.54	0.07	0.95
Small operating budget	2.57	1.34	2.54	1.14	0.10	0.92

Note. Scale: 1= Least stressful, 5= Most stressful

Objective 5

Objective five sought to determine if differences existed in male and female teachers' perceptions of student interaction stressors. There were four stressors included in this construct and significant differences were not found for any of the four. Table five includes the comparisons for all four student interaction stressors.

Table 5

	Male		Female			
Student Interaction Stressors	*M*	*SD*	*M*	*SD*	*t*	*p*
Lack of student interest	3.00	1.29	2.56	1.02	1.64	0.11
Student discipline	2.89	1.30	3.21	1.17	-1.10	0.28
Student recruitment	2.81	1.33	2.84	1.22	-0.11	0.92
Teaching learning disabled students	2.69	1.24	2.87	1.20	-0.63	0.53

Note. Scale: 1= Least stressful, 5= Most stressful

Objective 6

Objective six sought to determine if differences existed in male and female teachers' perceptions of curriculum development stressors. There were nine stressors included in this construct. No significant differences were found for any of the nine stressors (Table 6).

Table 6

	Male		Female			
Curriculum Development Stressors	*M*	*SD*	*M*	*SD*	*T*	*p*

Creating curriculum from scratch	3.22	1.29	3.15	1.39	0.20	0.84
Teaching new content	2.97	1.04	3.23	1.16	-1.02	0.31
Inexperience/unfamiliarity w/ course content	2.84	1.28	2.97	1.39	-0.45	0.66
Spending time on curriculum development	2.78	1.08	2.82	1.25	-0.14	0.89
Graduation requirements	1.84	1.01	2.29	1.20	-1.75	0.08
State funding applications	1.97	1.03	2.16	1.10	-0.75	0.46
Completing GPS requirements	2.49	1.10	2.85	1.31	-1.30	0.20
Organizing and supervising teaching Laboratories	2.65	1.18	2.82	1.17	-0.64	0.53
Developing performance based assessment instruments	2.56	0.94	2.64	0.99	-0.38	0.70

Note. Scale: 1= Least stressful, 5= Most stressful

Objective 7

Objective seven sought to determine if differences existed in male and female teachers' perceptions of administrative support stressors. There were four stressors included in this construct. Significant differences were not found for any of the four. Table seven includes the comparisons for all the administrative support stressors.

Table 7

	Male		Female			
Administrative Support Stressors	M	SD	M	SD	t	p
Inability to collaborate w/ other teachers	1.89	1.04	2.26	1.29	-1.34	0.18
Lack of administrative support	2.27	1.37	2.56	1.54	-0.88	0.38
Lack of support from guidance	2.70	1.43	2.69	1.22	0.03	0.97
Developing relations with administrators	2.23	0.92	2.25	1.01	-0.10	0.92

Note. Scale: 1= Least stressful, 5= Most stressful

Conclusions/Recommendations

The average participant in this study was a white female; however it should be noted that gender was split almost in half. Over 84% of respondents were less than 35

years old and most held bachelor's degrees from traditional agriculture education programs. Of those participating in this study, over 40% held advanced degrees.

The findings of this study indicate that beginning teachers, both male and female, feel similar amounts of stress from the majority of activities related to being an agriculture education teacher regardless of gender. When looking at stressors related to administrative support, curriculum development, student interactions and financial matters, there were no significant differences in how men or women feel related stress. These findings are different from other research studies (Okpara, 2005; Antoniou, 2006) which found that females exhibited higher levels of teachers' stress related to administrative support, curriculum development, and interactions with stakeholders.

Looking at stressors related to FFA, individual FFA related activities and requirements showed no significant differences in responses of men or women. However, responses from female participants indicated that FFA responsibilities caused them significantly more stress than that indicated by male participants. Garton and Chung (1996) sited preparing FFA degree applications, developing public relations programs and preparing proficiency award applications as the in-service needs of the first year agriscience teachers. Mundt and Conners' (1999) found a plethora of problems faced by first year agriculture teachers, one of which was managing the overall activities of the local FFA chapter. Case and Whitaker (1998) note that teachers point to a lack of support from their school or community for the FFA.

As identified in Table 1, 77% of the female respondents were married in comparison to 57% of the males. Is this added stress for female teachers due to external variables? For example, of those who are married and have young children, are the female teachers more active than their male counterparts in planning childcare? A study of this same group of [state] agricultural education teachers by Murray, et al. (2011) found that the average female teacher who has taught five years or less has 1-2 children at home, and utilizes daycare for their children. It should also be noted that in the Murray, et al. (2011) study, female agricultural education teachers reported approximately twice as much responsibility for child transportation and overall childcare as their male counterparts. Additional studies by Okpara, et al. (2005), Antoniou et al. (2006), and Haw (1982) also support the concept that female teachers have higher levels of teachers' stress due to the fact that they must balance that females typically have to balance family and professional responsibilities more so than their male counterparts.

According to Kantrovich (2010), many states are still feeling the pressure of not having an adequate number of teachers to fill vacant agricultural education positions. In 2009, approximately 70% of newly qualified teachers entered the workforce (Kantrovich, 2010). One could argue that the aforementioned stress factors highlighted in this study could contribute to this dilemma. Are college students cautious of entering the profession because of the long hours? On average, agricultural education teachers' in [state] work a 57 hour work week (Murray, et al. 2011). Are young teachers leaving the profession because it is difficult to balance their career and family obligations? Ingersoll (2001), a nationally recognized expert on teacher shortages, stated that more than one-third of beginning teachers leave during the first three years, and almost half of teachers leave within the first five years.

As identified in this study, the top three stressors were: 1. Demands of class load/time; 2. Overburdened workloads; and 3. FFA responsibilities. As previously stated, female teachers felt the greatest stress from managing their FFA chapters. Are the challenges of maintaining a successful FFA chapter causing undo stress that leads to more female agricultural education teachers leaving the profession in comparison to their male counterparts? Research has proven that increased teachers' stress will eventually lead to burnout (Antoniou, Polychroni, & Vlachakis, 2006; Timms, Graham, & Caltabiano, 2006). Furthermore, new teachers are more susceptible to burnout because of the potential to be exposed to higher levels of teachers' stress (Mearns & Cain, 2003).

Will these levels of teachers' stress cause burnout among females in the agricultural education profession? Future studies should focus on female teachers to get a more in-depth look at what exactly the issues are that contribute to overburdening and if specific FFA responsibilities have a stronger time demand than others. Furthermore, studies should be conducted to determine if these new teachers are beginning to exhibit signs of burnout and also attempt to reach teachers who have left the field to determine if these factors were instrumental in their decision or if other factors exist that have not been identified in this study.

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The Implied Financial Impact Of Extended Contracts On Kentucky Agricultural Educators

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The Implied Financial Impact Of Extended Contracts
On Kentucky Agricultural Educators

ABSTRACT

Secondary education teachers in Kentucky are typically employed on a standard 9-month contract. However, as mandated by Kentucky Revised Statute 157.360, secondary agricultural educators in Kentucky are employed on a 12-month extended employment contract. This study quantifies the lifelong financial benefits of this mandate. Using average salary schedules, inflation rate data, and average rates of salary increase, this study projects future salary rate and retirement annuity benefit amounts. The study uses average demographic data for years of teaching service, rank attainment rates, retirement age, and life expectancy to determine the projected career earnings and post-retirement annuity benefits for the average Kentucky agricultural educator beginning a career in the 2009-2010 academic year. The results show that, when compared to a standard Kentucky academic work year of 187 days, there is a significant differential in lifetime benefits for educators employed on a 12-month extended contract (higher annual salaries and greater retirement benefits). In total, the differential lifetime financial benefit of KRS 157.360 is $1.3 million for male agricultural educators and $1.5 million for females. This is a perceived huge boon for agricultural education in the commonwealth of Kentucky as it provides a major incentive for university students entering the education field unsure of their area of study. This study shows, however, that under various interest rate assumptions, the differential in retirement benefits, evaluated on a discounted present value basis, may not be as significant as expected.

INTRODUCTION

Agricultural education programs are built on three core areas: classroom and laboratory instruction, supervised agricultural experience programs, and FFA activities and opportunities (National FFA Organization, 2010a). This dynamic model, which intertwines classroom teaching with experiential learning and leadership development, serves an important and vital role in the American education system. However, this model also presents special challenges and unique needs as well. One such challenge is the need for teachers who are willing to teach year-round, rather than just teach for the duration of the standard nine-month instructional year enjoyed by teachers in most other disciplines. Torres, Ulmer, and Aschenbrener (2007) state, "Because of the complex roles and program responsibilities, a generally accepted notion is that agriculture [sic] teachers have greater workloads and work longer hours than many other education teachers." In support of their findings, Murray (2010) reports that Georgia agricultural teachers work an average of 57 hours per week and 39 days per summer.

The number of young people growing up on farms and/or entering farming as a profession has dwindled over the last two generations. This downturn has resulted in fewer individuals who are interested in teaching in the agricultural education area, especially considering the aforementioned extended work load in this specific area. Recognizing this unique need, the state of Kentucky, through Kentucky Revised Statute 570.360, has mandated that all agricultural educators in the state receive instructional contracts for 12-months (Kentucky Legislature, 2010b).

In addition to the documented need for extended contracts in agricultural education, extended contracts may also serve to improve recruitment, retention, and job satisfaction of existing agricultural educators. Cano and Miller (1992) found that salary was considered to be a "dissatisfier" among agricultural teachers. Extended contracts serve to increase the salary of agricultural educators by decreasing the disparity between the number of days actually worked and the number of days contracted to work. In other words, agricultural educators on a 12-month contract are paid for more of the days worked.

This study seeks to evaluate the incremental financial impact of the KRS-mandated 12-month employment contracts on Kentucky agricultural educators beginning a career in 2009-2010. The results clearly show that this unique pay structure amounts to a substantial difference in pay and retirement benefits when compared to other secondary teachers.

REVIEW OF LITERATURE

The current single salary schedule model of teacher compensation was first introduced simultaneously in Denver, Colorado, and Des Moines, Iowa, in 1921. This model uses only two criteria for calculating teacher pay: the degree(s) held and years of teaching experience. The single salary schedule was implemented primarily as an anti-discrimination tool (Koppich, 2010). While this model has endured until present time, variations of the model have been introduced. New models may include career laddering, knowledge and skills-based pay, pay for performance, and bonuses for hard-to-staff geographic regions or content areas (Springer & Gardner, 2010).

A review of the literature documents a trend of increasing job responsibilities in agricultural education (Delnero & Montgomery, 2001). Teachers often work well beyond a 40-hour week supervising student projects, coaching career development event teams, evaluating

student work, and preparing lessons (Straquadine, 1990). These increased responsibilities for agricultural educators provides justification for extended contracts to ease the job burdens.

Other research points to the importance of agricultural education extended contracts in the United States and Kentucky with respect to job satisfaction (Bennett, Iverson, Rohs, Langone, & Edwards, 2002; Cano & Miller, 1992), supervised agricultural experience program quality (Dyer & Williams, 1997), FFA involvement (Jewell, 1987; Portillo & White, 2002), and the attraction and attainment of quality agricultural instructors to the profession (Myers, Breja, & Dyer, 2004). Walker, Garton, and Kitchel (2004) assessed job satisfaction and retention of agricultural teachers. The authors identified 26 job responsibilities of agriculture instructors. The list included responsibilities faced by the majority of teachers, regardless of content area, such as classroom instruction, laboratory instruction, and interacting with administrators and parents. The list of responsibilities also included items more unique to agriculture education. These items included record book instruction, Supervised Agriculture Experience visitations, career development, FFA leadership activities, FFA fundraising, summer programs, fairs/showing/exhibiting, young farmer/adult instruction, and utilize advisory committee.

As indicated above the impact of extended contracts in agricultural education on both student and program success has been the focus of previous research. However, the financial impact of extended contracts on agricultural educators is not well-documented. The financial implications of these contracts, in terms of lifetime earnings and retirement benefits, is the focus of this study.

BACKGROUND

Teacher Compensation in Kentucky

Kentucky, like 21 other states, utilizes district salary schedules which base teacher pay standards on a teacher's level of education and years of experience (Cissel, 2010).

Currently, Kentucky's state-wide salary schedule consists of three standard ranks. Rank III requires a bachelor's degree leading to a provisional teaching certificate. Rank II requires a master's degree or 32 hours of approved graduate credit. Rank I requires 30 hours of approved graduate credit beyond rank II, 60 hours of approved graduate credit including a master's degree, or National Board for Professional Teaching Standards Certification (Kentucky Education Professional Standards Board, 2011). The Kentucky Department of Education (KDE) reported that in 2008, 22.7% of teachers in Kentucky were paid as Rank III teachers, 49.8% were Rank II, and 26.4% were Rank I.

According to KTRS (Kentucky Teacher Retirement System) data in 2006, the average teacher in Kentucky reached Rank II status beginning with the 11th year of service. According to data published by Kentucky Department of Education's Office of Administrative Support, the average annual teacher salary across all disciplines in Kentucky in 2009-2010 was $52,351 (Kentucky Department of Education, 2011).

Extended Employment Contracts in Agricultural Education

In Kentucky, extended contracts are mandated by Kentucky Revised Statute 157.360. The law states that all contracts for agricultural education must be for twelve months. During the time period outside of the regular school term, teachers are to be responsible for supervision and instruction of students' agricultural experience programs, adult agricultural education programs,

and development of leadership activities (Kentucky Legislature, 2010b). Specifically, sub-section (a) of the law provides that: "Instructional salaries for vocational agriculture classes shall be for twelve (12) months per year. Vocational agriculture teachers shall be responsible for the following program of instruction during the time period beyond the regular school term established by the local board of education: supervision and instruction of students in agriculture experience programs; group and individual instruction of farmers and agribusinessmen; supervision of student members of agricultural organizations who are involved in leadership training or other activity required by state or federal law; or any program of vocational agriculture established by the Division of Career and Technical Education in the Department of Education. During extended employment, no vocational agriculture teacher shall receive salary on a day that the teacher is scheduled to attend an institution of higher education class which could be credited toward meeting any certification requirement."

Teachers' Retirement System of the State of Kentucky

In 1938, Kentucky legislators signed into law the Teachers' Retirement System of the State of Kentucky. On July 1, 1940, the system began operation and employees of Kentucky public schools and some colleges were allowed to contribute earnings toward retirement. The system provides retirement benefits for participants who have served at least 27 years in eligible employment as a teacher in Kentucky without regard to age, or who have served a minimum of five years of eligible employment and are at least 60 years old. Individuals who are 55 or older and have served a minimum of 5 years in an eligible position are entitled to a partial retirement benefit. The system is funded by both employee and employer contributions. Kentucky secondary teachers contribute a mandatory 9.855% of pre-tax income. Employers contribute an additional 3.25%.

KTRS is a defined benefit plan. While participants have several options from which to choose (regarding benefits and beneficiaries), a basic formula is used as a foundation for benefits calculations. The formula includes the highest three annual salaries, the number of years of service, and a nominal multiplier to arrive at a yearly annuity amount.

The Average Kentucky Career Educator

According to the KTRS (2006), the average teaching retiree in Kentucky retires at age 56. The average retiree in Kentucky served for 30 years. The average teacher earned Rank III pay status for the first ten years of service and attained Rank II pay status beginning with the 11th year of teaching. According to National Vital Statistics Reports published by the United States Center for Disease Control (2011) the average life expectancy for males in the United States is 75.7 years while females are expected to reach 80.6 years. As such, the average retiring male should expect to receive retirement benefits for approximately 19.7 years (75.7 minus 56). The average retiring female educator should expect to receive benefits for approximately 24.6 years.

Cost of Living Allowance (COLA) for KTRS Retirees

KTRS provides a standard, statutory cost of living adjustment (COLA) in the full amount of one and one-half percent (1.5%) is annually. This establishes a minimum annual COLA of 1.5%. However, an additional "ad hoc" COLA is designated every two years by the Kentucky

Legislature to assist benefits in keeping pace with inflation. The amount of this increase is based primarily on consumer price index.

DATA AND METHODOLOGY

To effectively evaluate the financial impact of extended employment contracts on Kentucky agricultural educators the following objectives were developed: 1) Determine the average career salary benefit to a Kentucky agricultural educator employed on a 9 and 12-month employment contract; 2) Calculate the Kentucky Teacher Retirement System annuity benefit of both a male and female Kentucky agricultural educator retiring from teaching with a 9 and 12-month employment contract; and 3) Compare the salary component and the retirement component to determine the exact difference once can expect starting a career in the agricultural education field as opposed to teaching in another subject area.

Consistent with the methodology employed by Gall, Gall, & Borg (2007) the research contained herein is descriptive and uses quantitative, non-experimental methods of data collection and calculations on gathered data to complete the analysis. The population of this study consisted of the 138 school districts within the state of Kentucky that employed agricultural educators during the 2009-2010 academic years. A purposive, stratified sampling method was utilized. In order to identify a geographical cross-section of schools across the state of Kentucky, three schools were chosen from each of the eleven FFA regions in the state. Thirty-three school districts were included in the resulting sample. In order to attain a sample across varying sizes of schools, one urban, one suburban, and one rural school district was selected from each region. According to Leedy and Ormrod (2005), such a purposive sampling method is acceptable when seeking to identify a sample that is typical of the population for a specific purpose.

Current Educator Salary Data and Future Educator Salary Projections

Salary schedules were collected for each of the thirty-three school districts in the sample. Schedules were based on district files sent to the Kentucky Department of Education (KDE) for the 2009-2010 academic years. Using these thirty-three schedules, an average salary schedule was developed for Ranks I, II, and III. Rank IV was not included due to the minute number of educators employed at that rank.

Salary history data for the most recent twenty-year period was used to predict the most likely rate of future annual salary increases. The compound interest formula used to calculate historical annual rate of increase for teacher salaries is as follows:

$$A = P\,(1 + r)^t$$

where:
A = 2009-2010 average salary
P = 1989-1990 average salary
r = rate of increase
t = number of years

According to the Kentucky Department of Education (2011) the average salary for a teacher in Kentucky was $27,909 during the 1989-1990 academic years. This figure increased to $52,359

for the 2009-2010 academic years. Compounded annually, this implies an average annual increase of 3.195% for this twenty-year period.

Teacher Retirement Benefit and Inflation Rate Data

Potential retiree benefits were calculated using data from the Teachers Retirement System of the State of Kentucky (KTRS). Life expectancy data for both males and females published in 2011 by the United States' Center for Disease Control was used to determine average length of retirement benefits.

To adjust for future KTRS Cost of Living Allowance increases above the minimum annual rate of 1.5%, we calculated the average inflation rates for the last twenty years. According to data published by the United States Department of Labor's Bureau of Labor Statistics in 2010, the CPI-U (Consumer Price Index for All Urban Consumers) was 131.6 in August, 1990. In August, 2010, the index was 218.312. During this twenty-year period, the CPI-U rose 86.712 points. When compounded annually, this implies an average annual inflation rate of 2.563% over the twenty year period.

RESULTS

Using the selected salary schedules, a state-wide average salary schedule was developed for Ranks I, II, and III for the 2009-1010 academic year. Using the historical average annual salary increase of 3.195% we calculated projected future average salary schedules based upon the number of years of service after the 2009-2010 academic year. Using the standard Kentucky Department of Education academic year of 187 academic work days, corresponding values were then determined for 12-month extended employment contracts. Table 1 shows the estimated career salaries for teachers on 9-month contracts while Table 2 shows the estimated career salaries for teachers on 12-month contracts.

Table 1
Career Salaries for Secondary School Instructors on Nine-Month Contracts by Rank at Selected School Districts in Kentucky

	Rank I Career Sum	Rank II Career Sum	Rank III Career Sum
1	42,550	38,629	35,011
5	290,018	264,566	240,808
10	611,631	559,389	509,868
15	1,016,040	931,726	846,751
20	1,506,232	1,384,891	1,259,212
25	2,093,215	1,926,879	1,757,350
30	2,787,528	2,569,206	2,347,581
35	3,603,332	3,324,400	3,041,535
40	4,558,100	4,208,196	3,853,663

Table 2
Career Salaries for Secondary School Agriculture Instructors on Twelve-Month Contracts by Rank at Selected School Districts in Kentucky

Years of Service	Rank I Career Sum	Rank II Career Sum	Rank III Career Sum
1	55,065	49,990	45,308
5	375,318	342,379	311,633
10	791,523	723,915	659,829
15	1,314,876	1,205,763	1,095,795
20	1,949,242	1,792,211	1,629,568
25	2,708,867	2,493,608	2,274,217
30	3,607,390	3,324,855	3,038,045
35	4,663,136	4,302,164	3,936,104
40	5,898,718	5,445,900	4,987,093

As previously noted, the average teaching retiree in Kentucky retires after serving for 30 years and earns Rank II pay status beginning with the 11th year of teaching. A typical Kentucky agricultural educator who began a career in 2009-2010, and is employed on a 12-month contract can expect career earnings of $3,167,945. A 9-month employment contract, using the aforementioned assumptions, results in expected career earnings of $2,447,958. This spread ($719,987) represents a 29.41 % difference in career earnings.

Table 3
Total Projected Career Earnings by Extended Contract Length for the Average Career Educator in Kentucky on a 9 and 12-Month Contracts

	9 Month	Difference	12 Month
Rank III Career Pay (10 yrs)	509,868	149,961	659,829
Rank II Career Pay (20 yrs)	1,938,090	570,026	2,508,116
Total Career Earnings	2,447,958	719,987	3,167,945

First Year Retirement Annuity Benefits

While the difference in career earnings is significant, it is also useful to compare the retirement benefits of teachers on both 9 and 12-month contracts. Using the salary data previously determined, we calculated the average of the highest three annual salaries. Following the standard KTRS benefit formula, shown below, we calculate the corresponding annuity payment for the first year of retirement. This formula includes years of service, average 3-year salary, and a multiplier of 2.5% for the first 30 years of service and 3.0% for service beyond 30 years. Tables 4 and 5 illustrate clearly the resulting values and the favorable first year retirement benefits using the 12-month model as compared to the 9-month model.

Total Years of Service < 30 **Y * S * .025**

Total Years of Service ≥ 30 **((Y – 30) * S * .030) + (30 * S * .025)**

where Y = years of service and S = Average of highest three years of salary.

Table 4

Projected Annual Annuity Benefits for the First Year of Retirement for Secondary Agricultural Instructors on a Nine-Month Contract at Selected Schools in Kentucky[1]

	Rank I		Rank II		Rank III	
Years of Service	3 Year Average Salary	1st Year Benefit	3 Year Average Salary	1st Year Benefit	3 Year Average Salary	1st Year Benefit
27	129,822	87,630	120,036	81,024	110,311	74,460
28	134,221	93,955	124,137	86,896	114,071	79,850
29	138,764	100,604	128,365	93,065	117,961	85,522
30	143,455	107,591	132,741	99,556	121,977	91,483
31	148,228	115,618	137,203	107,018	126,073	98,337
32	153,079	123,994	141,709	114,784	130,215	105,474
33	158,000	132,720	146,266	122,863	134,405	112,901
34	163,060	141,862	150,939	131,317	138,700	120,669
35	168,270	151,443	155,762	140,186	143,131	128,818
36	173,646	161,491	160,738	149,487	147,704	137,365
37	179,194	172,026	165,874	159,239	152,423	146,326
38	184,919	183,070	171,174	169,462	157,293	155,720
39	190,828	194,644	176,643	180,175	162,319	165,565
40	196,925	206,771	182,286	191,401	167,504	175,880

Table 5

Projected Annual Annuity Benefits for the First Year of Retirement for Secondary Agricultural Instructors on a Twelve-Month Contract at Selected Schools in Kentucky

	Rank I		Rank II		Rank III	
Years of Service	3 Year Average Salary	1st Year Benefit	3 Year Average Salary	1st Year Benefit	3 Year Average Salary	1st Year Benefit
27	162,437	109,645	150,123	101,333	137,995	93,146
28	167,946	117,562	155,311	108,718	142,697	99,888
29	173,633	125,884	160,588	116,426	147,573	106,991
30	179,514	134,636	166,043	124,533	152,594	114,446
31	185,585	143,828	171,729	133,948	157,798	123,083
32	191,845	155,394	177,576	143,836	163,165	132,164
33	198,045	166,358	183,365	154,026	168,496	141,536
34	204,418	177,844	189,223	164,624	173,879	151,275
35	210,950	189,855	195,269	175,742	179,434	161,491
36	217,689	202,451	201,508	187,402	185,167	172,206
37	224,645	215,659	207,946	199,628	191,082	183,439
38	231,822	229,504	214,590	212,444	197,189	195,217
39	239,229	244,013	221,446	225,875	203,489	207,559
40	246,872	259,216	228,521	239,947	209,990	220,490

Future Retirement Annuity Benefits

Using the average Kentucky career educator data outlined earlier in the study, as well as the Center for Disease Control's published life expectancy values, we estimated the average

post-retirement benefits for both an educator employed under a typical 9-month contract as well as a Kentucky agricultural educator employed on a 12-month extended employment contract. These benefits are displayed in Table 6 below. A typical male Kentucky agricultural educator who began a career in 2009-2010, and is employed on a 12-month contract can expect to be paid a total of $3,013,242 in post-retirement annuity benefits. A female Kentucky agricultural educator beginning a career in the same year can expect post-retirement annuity benefits to total $4,069,475. This compares favorably with male and female educators employed under a standard 9-month contract, which show post-retirement benefits of $2,408,893 and $3253284 respectively. These estimates are based on the following characteristics of a typical Kentucky educator: the average Kentucky educator teaches for thirty years, reaches rank II prior to beginning the eleventh year of service, retires at age 56, and has a life expectancy of 75.7 years as a male or 80.6 years as a female. Additionally, since there is a significant life expectancy between males and females the retirement benefits are segregated into male and female educators.

Table 6

Total Projected Average Post-Retirement Benefits by Gender for Career Educators in Kentucky Employed on 9-month and 12-month Employment Contracts

	9 Month		Difference		12 Month	
	Male	Female	Male	Female	Male	Female
Post-retirement benefits	2,408,893	3,253,284	604,349	816,191	3,013,242	4,069,475

The Present Value of Future Retirement Annuity Benefits

This next section focuses on an often overlooked yet very important part of this analysis: the present value of the differences in retirement benefits. It is discussed previously that the twelve month employees will enjoy a financial advantage (over the 9-month employees) during their working life (higher annual income) and also during retirement (higher salary averages result in higher retirement annuity payments). Table 7 and table 8 below illustrate the present value of the differences in retirement benefits. For both male and female workers, we calculated the present value (at retirement) of the expected future retirement benefits based upon: 1) retirement at age 56; and 2) life expectancies (75.7 years for male and 80.6 for females). The tables below show differences (in present value terms) at the point of retirement.

Table 7					
Assumptions: Male worker Life expectancy 75.7 years Earnings rate = 8% COLA during retirement = 2.563%			Present Value Difference in Benefits (12 mos-9mos) One Day One of Retirement		
Hire Age	Years Worked	Retirement Age	Rank I	Rank II	Rank III
29	27	56	$287,190	$264,935	$243,763
28	28	56	$307,958	$284,673	$261,400
27	29	56	$329,783	$304,749	$280,068
26	30	56	$352,808	$325,830	$299,557
25	31	56	$368,005	$351,308	$322,817
24	32	56	$409,620	$378,990	$348,177
23	33	56	$438,815	$406,528	$373,550
22	34	56	$469,393	$434,497	$399,262

Table 8					
Assumptions: Female worker Life expectancy 80.6 years Earnings rate = 8% COLA during retirement = 2.563%			Present Value Difference in Benefits (12 mos-9mos) On Day One of Retirement		
Hire Age	Years Worked	Retirement Age	Rank I	Rank II	Rank III
29	27	56	$320,758	$295,901	$272,254
28	28	56	$343,953	$317,946	$291,953
27	29	56	$368,329	$340,369	$312,802
26	30	56	$394,045	$363,914	$334,570
25	31	56	$411,019	$392,369	$360,548
24	32	56	$457,497	$423,286	$388,872
23	33	56	$490,104	$454,044	$417,211
22	34	56	$524,256	$485,282	$445,928

For example, the Rank II 12-month male employee with 30 years work experience will have a $325,830 present value advantage (at retirement) over a comparable 9-month male employee. The advantage to a Rank II 12-month female employee is even greater at $363,914. This results from the greater life expectancy of the female.

Perhaps somewhat surprising is the present value of that benefit difference at the start of one's career. For the male, the $325,830 PV difference at retirement (at age 56) is worth $32,380 at age 26. In other words, if a 9-month employee invests $32,380 in a tax deferred account earning 8 percent per year, he has the same expected retirement benefits as the 12-month employee. For the female worker, the present value of the retirement difference is $36,164.

The present values are highly sensitive to the investment rate assumption. If the interest rate is increased to 9 percent, the PV differences are for male and female employees are $22,836 and $25,168, respectively. At a 7 percent rate, the corresponding values are $46,197 and $52,638. The present values calculated at various interest rate levels are presented in Tables 9 (Male) and 10 (Female) below.

Table 9 Male		Present Value Difference in Benefits (12 mos – 9 mos) At Career Start								
		7 %			8%			9%		
Hire Age	Work Yrs	Rank I 7%	Rank II 7%	Rank III 7%	Rank I 8%	Rank II 8%	Rank III 8%	Rank I 9%	Rank II 9%	Rank III 9%
29	27	$49,882	$46,016	$42,339	$35,952	$33,166	$30,516	$26,066	$24,046	$22,124
28	28	$49,990	$46,210	$42,432	$35,697	$32,997	$30,300	$25,643	$23,704	$21,766
27	29	$50,030	$46,233	$42,488	$35,395	$32,708	$30,059	$25,193	$23,281	$21,395
26	30	$50,022	$46,197	$42,472	$35,061	$32,380	$29,769	$24,726	$22,836	$20,994
25	31	$48,763	$46,551	$42,775	$33,862	$32,326	$29,704	$23,662	$22,588	$20,756
24	32	$50,726	$46,933	$43,117	$34,900	$32,290	$29,665	$24,163	$22,356	$20,539
23	33	$50,787	$47,050	$43,233	$34,618	$32,071	$29,469	$23,748	$22,001	$20,216
22	34	$50,772	$46,997	$43,186	$34,287	$31,738	$29,164	$23,305	$21,573	$19,823
Life expectancy 75.7 years COLA during retirement = 2.563% Retirement Age: 56										

Table 10 Female		Present Value Difference in Benefits (12 mos – 9 mos) At Career Start								
		7 %			8%			9%		
Hire Age	Work Yrs	Rank I 7%	Rank II 7%	Rank III 7%	Rank I 8%	Rank II 8%	Rank III 8%	Rank I 9%	Rank II 9%	Rank III 9%
29	27	$56,545	$52,163	$47,995	$40,155	$37,043	$34,083	$28,728	$26,501	$24,384
28	28	$56,668	$52,383	$48,100	$39,869	$36,854	$33,841	$28,262	$26,125	$23,989
27	29	$56,714	$52,408	$48,164	$39,532	$36,531	$33,572	$27,766	$25,658	$23,580
26	30	$56,704	$52,368	$48,145	$39,159	$36,165	$33,249	$27,251	$25,168	$23,138
25	31	$55,277	$52,769	$48,489	$37,820	$36,104	$33,176	$26,078	$24,895	$22,876
24	32	$57,503	$53,203	$48,877	$38,979	$36,064	$33,132	$26,630	$24,639	$22,636
23	33	$50,787	$47,050	$43,233	$34,618	$32,071	$29,469	$26,173	$24,247	$22,280
22	34	$50,772	$46,997	$43,186	$34,287	$31,738	$29,164	$25,685	$23,776	$21,848
Life expectancy 80.6 years COLA during retirement = 2.563% Retirement Age: 56										

CONCLUSION

A typical Kentucky agricultural educator who began a career in 2009-2010, and employed on a 9-month contract can expect estimated career earnings of $2,447,958. This estimate is based on the assumption that the average Kentucky educator teaches for thirty years

and reaches rank II prior to beginning the eleventh year of service. Based on these same assumptions, a Kentucky agricultural educator employed on a 12-month employment contract should expect career earnings of $3,167,945. This educator enjoys approximately 29% more career benefits than his 9-month counterpart.

The 12-month contract employee can expect higher post-retirement annuity benefits as well. Based on the KTRS defined benefit formula and on actuarial life expectancy assumptions (75.7 years for male, 80.6 years for female), a male educator on a 12-month contract can expect to be paid a total of $3,013,242 in post-retirement annuity benefits. This represents a differential of $604,349 relative to the $2,408,893 post-retirement benefits expected by a 9-month contract male employee. A female Kentucky agricultural educator beginning a career in the same year can expect post-retirement annuity benefits totaling $4,069,475. This is $816,191 more than expected by a 9-month contract female educator.

It is clear that the post-retirement benefit differentials are significant in total. We have shown, however, that under various interest rate assumptions, the differential in retirement benefits, evaluated on a discounted present value basis, may not be significant as expected. Using interest rates from 7% to 9%, the differential in retirement benefits (at the start of one's career) for a typical male educator ranges from $22,836 to $46,197. For a female educator the range is from $25,168 to $52,368. In even higher interest rate environments, the present value differential will decline further. Using an interest rate of 12%, the differential decreases to below $9,000. This suggests that, depending on interest rate assumptions, a 9-month contract educator can potentially match the differential in post-retirement annuity benefits (of a 12-month contract educator) though careful investment planning.

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Agricultural Education in Georgia: Determining Teacher Supply and Programmatic Demand

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Abstract

This study identified gender, age, and years of experience demographics for current Georgia agricultural teachers and described the subjects' interest in pursuing either a master or doctoral degree of Agricultural Education from the University of Georgia. The survey population included all middle, high, and adult education (Young Farmer) teachers in Georgia. Survey instruments were distributed during the 2006 Georgia Vocational Agricultural Teachers Association Summer Conference; responses were received from 293 of 389 teachers employed in Georgia (74% response rate). Approximately 74% of respondents were male; 29% were between the age 22 to 30. Nearly 34% of participating teachers had zero to five years of teaching experience. Further research in teacher retention and interest in advanced degrees is needed for Georgia agricultural educators.

Introduction/Conceptual Framework

In the past ten years, total school enrollment for elementary and secondary schools rose by nearly 3.1 million students (Gerald & Hussar, 1998). During the same time span, a 15% increase in grades 9-12 enrollment was projected creating a 14% escalation in classroom teachers needed from 1996 to 2008 (Gerald & Hussar, 1998). Between the years 1983 and 1996, the number of classroom teachers has increased by 22% in elementary and secondary schools (Gerald & Hussar, 1998). Continuous population expansion could possibly increase the student to teacher ratio. An average student to teacher ratio in 1985 was 17.9:1 compared to the average ratio in 1999-2000 of 23.6:1 for public secondary schools and 21.1:1 for public elementary schools (National Center for Education Statistics, 2006). Further, the United States population is expected to augment by nearly 26.8 million people from 2006 to 2016 (Census Bureau, 2005).

A report from the Education Commission of the States entitled *Efforts to Improve Quality of Teaching Face Numerous Obstacles* stated that "…there are not enough good teachers in the nation's classrooms, especially in areas of rapid population growth, hard-to-staff schools and high-demand subjects such as mathematics, science, bilingual and special education" (p.1). The study further maintained that "Teacher preparation programs may produce a sufficient quantity of graduates, but many of those graduates do not go into teaching, and the attrition rate of those who do is high" (p. 1). Darling-Hammond and Rustique-Forrester (1997) predicted, "Of the teachers in classrooms in the year 2006, more than half will have been hired in the next 10 years" (p. 1). Huling-Austin (1986) concluded that 15% of first year teachers would not teach more than one year. Nearly 2.5 million teachers were surveyed in Luekens, Lyter, & Fox (2004) 2000-2001 study, 8.9% or 43,100 individuals left the teaching profession with only 1 to 3 years of teaching experience. Also, nearly 50% of new teachers in urban school settings departed within their first five years of entering the profession (National Education Association, n.d.).

A lack of highly skilled teachers and program expansion could create some pressing issues for the agricultural education profession (Camp, Broyles, & Skelton, 2002; Connors, 1998). Camp, Broyles, and Skelton (2002) suggested "…newly qualified potential teachers fail to take teaching positions even though positions are going to under-qualified people or indeed remaining unfilled" (p. 33). Of the 857 newly qualified potential teachers prepared to enter the Agriculture Education profession in 2001, only 59.4% or 509 individuals decided to teach (Camp, Broyles, &

Skelton, 2002). The "net loss" of agricultural education teachers for 2001 was 798.5 out of a total of 11,189 positions nationwide or 7.1% (Camp, Broyles, & Skelton, 2002). In Georgia during the year 2001, 25 newly qualified teachers from either the University of Georgia or University of Georgia completed their training but only 15 entered the Agriculture Education profession (Camp, Broyles, & Skelton, 2002). Camp et al. (2002) concluded that, "Agricultural Education remains a field in which the placement rate is relatively high for those who actually want teaching jobs" (p. 33).

Another phenomenon impacting public and private educational institutions is retirement trends. Approximately 76 million individuals were born between 1946 and 1964, thus creating the "Baby Boom" generation (Gallagher, 2005). To date, those born in 1946 would be 60 years of age and may be nearing the end their professional career. If the original "Baby Boomers" work until their mid-sixties before retiring, then "…between 2008 and 2020 tens of millions of people will leave the work force" (Gallagher, 2005) and descendants of the Baby Busters (1958-68), Generation X (1961-81), and MTV Generations (1975-85) will be needed to fill the vacated employment opportunities.

Camp et al. (2002) suggested that research was needed in order to increase the number of newly qualified teachers, identify factors to decrease new teacher attrition rates, and promote agricultural education to states without agricultural education training programs. In order to increase the number of newly qualified teachers, recruitment programs may be needed to emphasize the importance or availability of agriculture education positions. College institutions or school districts may "…employ various strategies…including pre-college orientation and internship opportunities, college scholarship and loan-forgiveness programs, and salary or bonus incentives for teachers" (Education Commission of the States, 2000, p. 1).

Early initiatives focused toward high school and middle school students have been established to increase new teacher recruitment. Duncan (2004) reported that "School visitations can be a means to building long-standing relationships with secondary educators and it gives their students an opportunity to speak with a representative from the institution" (p. 27). Institution representatives "…can be the strongest advocate for university agricultural departments and programs" (Duncan, 2004, p. 21). Teacher educators have extensive knowledge identifying "…career opportunities for university graduates; the development of articulation agreements between secondary schools and universities; and to develop a strong recruiting link between high schools and university programs and departments of agriculture" (Duncan, 2004, p. 21). These recruitment efforts could potentially "…offer students information about teaching, special assistance to complete high school and attend college, and opportunities to tutor or work in classrooms" (Education Commission of the States, 2000, p. 2-3).

Other recruitment strategies for teacher educators "…make efforts to recruit minorities, teachers' aides, local residents, retired military personnel, outstanding college graduates and other target populations" (Education Commission of the States, 2000, p. 3). Efforts are also being made to advertise scholarships, loan-forgiveness programs, and financial incentives in the form of "…signing bonuses, housing allowances, moving expenses and salary increases to teach…" (Education Commission of the States, 2000, p. 3). Walker, Garton & Kitchel (2004) also reported that "…tuition reimbursement, emergency and alternative certification programs, and

the rehiring of retired teachers" (p. 28) are being used to increase the number of qualified teachers.

"While many universities, states, and school districts have recently intensified teacher recruitment efforts, anecdotal evidence suggests that the retention of teachers is a long-term strategy for alleviating the teacher shortage" (Peiter, Terry & Cartmell, 2005, p. 11). Retention of teachers needs to begin during their initial experiences because Heath-Camp and Camp (1992) suggested that "no period is more critical to the success of a beginning teacher than the induction phase" (p. 35). The first ten weeks for a teacher, especially if the teacher has low career commitments due to unexpected expectations, could have a dramatic impact on career longevity (Knobloch & Whittington, 2003). Knobloch and Whttington (2003) stated that "The initial experiences as a teacher can determine whether or not a teacher stays in the profession and makes a difference in helping students learn and develop." Also, "Retaining first year teachers has profound implications for student achievement and the possibility of sustained educational reform" (Peiter, Terry, & Cartmell, 2005, p. 11).

To aid teacher retention, "…education researchers have learned that if an individual is not satisfied with his/her job, the likelihood for that individual to remain in the teaching profession is greatly diminished" (Walker, Garton, & Kitchel, 2004, p. 29). Further, "If teachers go into their first year of teaching without the belief that they can make a difference, chances are pretty good that they may never develop such an attitude" (Burley, Hall, Villeme, & Brockmeier, 1991, p. 15).

Purpose and Objectives

The purpose of this study was to determine the future demand for agricultural teachers in the state of Georgia. To accomplish this purpose, the following research objectives were developed:

1. Determine selected demographic characteristics of present agricultural education instructors in Georgia; and
2. Determine future attrition rates for agricultural education instructors in Georgia.
3.

Methods and Procedures

The population for this descriptive census study included all middle school, high school, and adult agricultural education (young farmer) teachers in the state of Georgia (*N= 389*). Surveys were distributed and collected at the Georgia Vocational Agriculture Teachers Conference in July of 2006 during regional teacher meetings. To further increase survey participation, surveys were also distributed to teachers while attending regional meetings during September, 2006. In all, 293 agricultural educators from Georgia participated in this study, yielding a response rate of 75.3%.

A modified version of a survey designed by Woglom et al. (2005) to determine the future demand for agriculture teachers in the state of Kentucky was employed to survey the teachers. The researchers modified the survey instrument to reflect the predetermined objectives for this study. It was determined that the modifications would not have an impact on the reliability of the instrument as determined by Woglom et al. (2005).

The survey contained 34 questions with responses varying from "yes" or "no," use of Likert-type scales, and single-option questions. The instrument data was then aggregated into the following categories: 1) personnel demographics pertaining to age, gender, geographical location, and number of years in the agricultural education profession; and 2) selective program demographics concerning number of teachers in a program, retirement eligibility, years anticipated to continue in the profession, and degree of interest in becoming an administrator. A panel of experts consisting of university faculty and State Department of Education (DOE) staff provided assistance to ensure face and content validity of the instrument.

Data collected at the conference was then compared to membership enrollment sheets collected by the Georgia Vocational Agricultural Teachers Association's Executive Secretary. The total amount of agricultural educators in the state of Georgia (N=389) was determined by correspondence through Georgia Vocational Agricultural Teachers Association's Board of Directors, Regional Coordinators (North, Central, and South), and other personnel employed by the Georgia Department of Education.

Collected data were entered into the Statistical Package for the Social Sciences (SPSS) 14.0™. Descriptive statistics were calculated.

Findings

Objective One: *Determine selected demographic characteristics of present agricultural education instructors in Georgia.*

Teachers were asked to respond to questions that described selected personal characteristics. Seventy four percent (n=217) of the teachers surveyed were male and 29% (n=85) of the respondents were between the ages of 22 and 30, while employment rates in both North and South regions yielded the same results at 35% respectively. Nearly 34% of the respondents had from zero to five years of teaching experience, while 15.7% of the participants had between six to 10 years of experience (Table 1).

Table 1: *Demographic Characteristics of Agricultural Educators in Georgia (N=293)*

Characteristic	*n*

			Percent
Gender	Male	217	74.2
	Female	74	25.2
	No Response	2	0.6
	Total	293	100
Age	22-30	85	29.0
	31-40	73	24.9
	41-50	86	29.3
	51-59	39	13.3
	60+	6	2.2
	No Response	4	1.3
	Total	293	100
Geographical region of employment	North	103	35.1
	Central	85	29.2
	South	103	35.1
	No Response	2	0.6
	Total	293	100
Years in Teaching Profession	0-5	99	33.7
	6-10	46	15.7
	11-15	36	12.2
	16-20	29	9.9
	21-25	31	10.5
	26-30	31	10.5
	30+	17	5.8
	No Response	4	1.3
	Total	293	100

Objective Two: *Determine future attrition trends for agricultural education instructors in Georgia*

To determine future attrition trends for agricultural education instructors in Georgia, teachers were asked to state how many years they anticipated to continue to teach from the day they completed the survey (Table 2). Of the 257 individuals that responded, 21% indicated they would teach between zero to five years, while 18% indicated they anticipated to teach between 26 and 30 years longer. Teachers were then asked to indicate the number of years until they would be eligible to retire from teaching (Table 3). Nearly 20% could retire from zero to five years and 22% could retire from 26 to 30 years.

Table 2: *Years Participants Anticipate Teaching*

Characteristic		*n*	percent
How many years do you anticipate you will continue to teach from today?	0-5	54	18.4
	6-10	43	14.7
	11-15	41	13.9
	16-20	28	9.6
	21-25	43	14.7
	26-30	47	16.1
	30+	1	.3
	No Response	36	12.3
	Total	293	100

Table 3: *Years Until Participants are Eligible for Retirement*

Years until you will be eligible to retire from teaching?	0-5	53	18.2
	6-10	33	11.4
	11-15	41	14.0
	16-20	33	11.3
	21-25	48	16.4
	26-30	62	21.2
	30+	0	0.00
	No Response	23	7.8
	Total	293	100

Conclusions

Of the 389 agricultural teachers in Georgia, 293 responded to the survey. Seventy-four percent of the participants were male. Approximately 29% of the respondents were between the ages 22 and 30, while 53% were less than 40 years of age. More than 33% had between zero and five years of experience, and nearly 27% of the respondents had 21 years or more experience.

Within the next ten years, over one-third of the participants anticipate retiring from the teaching profession, with the greatest percentage (18%) retiring within five years. Likewise, nearly 30% of the participants indicated that they are eligible for retirement in the next ten years. At the opposite end of this spectrum, over one-third of the participants indicated that they had been teaching for five years or less.

Recommendations for Future Research and Practice

As previously stated, Camp et al. (2002) suggested that research is needed in order to increase the number of newly qualified teachers, identify factors to decrease new teacher attrition rates, and promote agricultural education to states without agricultural education training programs. Consequently, the following recommendations are offered:

1) A longitudinal study should be conducted to monitor the teacher attrition rates for Georgia's agricultural teachers for their first five years in the profession.
2) Further research is needed to determine the needs of pre-service and in-service teachers for Georgia to adequately prepare them for the teaching profession.
3) A longitudinal study should be conducted for completers of the graduate programs offered by the University of Georgia to determine the attrition rate of program completers.

Discussion and Implications

This study has provided evidence that agriculture teacher education programs in the state of Georgia have several challenges to face in the near future. There is a substantial potential for retirement within the next five to ten years that will place increasing demands for the preparation of qualified instructors to fill these positions. In addition, there is a large portion of teachers who are in the "critical" entry phase of their career. One may argue that teacher education programs share the responsibility of mentoring these teachers and providing them with support needed to be successful as new teachers.

If one combines the trends identified in this Georgia study with findings that indicated that 15% of first year teachers leave the profession within a year (Huling-Austin, 1986), that 8% leave between one and three years (Luekens, Lyter, & Fox, 2004), and that 50% of new teachers in urban school settings departed within their first five years of entering the profession (National Education Association, n.d.), there seems to be a crisis. Furthermore, this crisis is expected to worsen based upon projected population growth (Census Bureau, 2005), retirement trends (Gallagher, 2005), and initiatives such as the one proposed by the National Council for Agricultural Education (n.d.) which is to have 10,000 quality agricultural education programs by the year 2015.

If professional development training, either pre-service or in-service, could serve as a means to increase job satisfaction, increase positive attitude towards the profession, and enhance teacher retention (Myers, et al., 2005), one could imagine what focused and formal graduate instruction in the department of Agricultural Leadership, Education, and Communication could do for the teacher shortage. Agricultural Education must continue to seek new and innovative ways to offer more teachers the chance to complete the master's and/or doctoral degree in Agricultural Education. Teacher educators could actually strengthen the profession while participants are completing these degrees by addressing stated areas of need (i.e. completing reports for administrators or organizing an effective advisory committee) (Garton & Chung, 1997, Myers, et al., 2005).

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