

The Inclusion and Content of an International Agriculture Education Course at the Post
Secondary Level: A Delphi Study

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Abstract

The purpose of this study was to determine the inclusion and content of an international agricultural education course at the post-secondary level by answering the following research questions: What disciplines of agriculture should be included in an international agricultural education course at the university level?; What competencies (knowledge, skills, and abilities) in international agriculture are needed by students and should be developed in a course in international agricultural education at the university level?; and How should an international agricultural education class be used in multiple degree programs at the university level?. A three round Delphi procedure was used to solicit expert opinions regarding each of the research questions. The results revealed the most significant disciplines as: extension and education, philosophy, policy, models, program planning, public and private systems, & evaluation; role of agriculture in a developing nation's economy; social, economic, political issues; and cross cultural communication. The competencies that should be developed identified by the panel were: skills working with other cultures; roles of change agents; environmental, developmental, conservation, sustainability, natural resources issues; extension models; understanding non-governmental organizations; knowledge of basic agriculture; ability to listen, plan and evaluate. The panel suggested the use of such a class in a multiple degree program should be a requirement for a minor in international agriculture. The study found that items not included among the panel consensus were items on practical or technical production practices. Further studies should be conducted to determine if the area of expertise of the panelists focused more on extension since they were in fact more familiar with extension techniques than any other areas, their experiences were based more on

educational typology than practical and technical systems, or their placement in those professional positions did not allow them to focus on the skills and trades that were already known to flourish in their geographical region. One recommendation is to develop a more diverse panel of experts that cover more global territory to gain further insight into the research questions. A more diverse panel may bring more variation to the results. A deeper search into the background and identity of each panel member may also be necessary to discover the uniqueness of each expert in gaining diversified responses. If a professional in international agricultural education was in a non-native country and answered the instrumentation questions based on their work in that environment, that may be different than answering the questions based on their activity in a native country.

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Chapter I

Introduction

It is common knowledge among those in the academic realm that there are myriad advantages for students who have great global perspectives and competencies (Irani, Place, & Friedel, 2006). In recent years, agricultural educators have become increasingly aware of the need to view the profession from a global perspective. Teachers are beginning to perceive themselves and their students as a part of the world community. International dependence on agricultural products and technical expertise, satellites, television, jet travel, worldwide employment opportunities, the Work Experience Abroad program, and the importance of international export markets have all served to create a better understanding of the globe beyond the boundaries of states and the nation (Harbstreet & Welton, 2000).

During the latter part of the past decade, a number of activities emerged to help make international agriculture instruction a reality in the secondary classroom (Moss, 1988). International agricultural education programs have become important for all students majoring in the discipline of Agriculture. The exposure students have to the global realm will provide them with a wider array of information and knowledge base than not taking such a course. These classes provide those students a firm perspective on the global aspect of marketing and communication information that is vital in understanding the effect that all agricultural entities have on one another. In the decade since agricultural education moved onto the global stage, a number of noteworthy events have occurred (Welton, 1987). The communication channels have been

broadened, intimacy with other cultures has flourished, and the connection between geographic locations has become shorter. Even though boundaries and issues still exist; the world has become more available and accessible. As the world becomes smaller and more flat through the use of modern transportation and progressive leaps in the communication and technological areas, it will be necessary for students in universities to be familiar with the critical workings of agricultural components on a global scale. It will not be enough to concentrate on the transnational markets, environmental conditions, and livelihood of people within our own boundaries.

Statement of the Problem

In every field of study, there is always room for growth. The assumption is that standards that universities use to develop their curriculums are in place to provide the best experience for its student population. Development of this curriculum is not simple or easy to accomplish with the demands placed on university professionals and faculty.

Deciphering the core curriculum for any major takes enormous time and patience to allow the development of a class to evolve into a credit worthy course for student study. The problem facing curriculum developers and university personnel is the inclusion of international agriculture education classes into their agriculture majors. Every student who enters into a bachelor program in the field of agriculture should have the opportunity to enroll in an international agriculture class that has been developed for the explicit purpose of exposing students to the global educational fields that transverse cultural boundary. A possible answer to the problem is to develop and offer an international agriculture education class for undergraduates in their field of study. This

class would introduce students to the global aspects of agriculture production and processing utilizing agricultural education as channel to deliver the course.

Purpose of the Study

The purpose of this study is to identify the areas that should be included in an international agricultural education course, identify competencies that should be attained by students who complete a course in international agricultural education, and utilization of an international education course in multiple disciplines within a post-secondary institution. The opinions and evaluations of the panelists will be based upon the research questions that are a direct result of their involvement by responding to the research instrument.

Research Questions & Objectives

To accomplish the purposes of this study, the following research questions were constructed:

1. What disciplines of agriculture should be included in an international agricultural education course at the university level?
2. What competencies (knowledge, skills, and abilities) in international agriculture are needed by students and should be developed in a course in international agricultural education at the university level?
3. How should an international agricultural education class be used in multiple degree programs at the university level?

Definition of Terms

For the purpose of this study, the following terms were defined by the researcher:

Ability: Competency in completing a task through natural aptitude or a acquired proficiency.

Agriculture Discipline: An area of agricultural education that encompasses a specific topic area and all areas related to that type of inquiry. For example; the discipline of agronomy includes the areas of crops, weeds, pest management, tillage practices, and soil practices.

Agricultural Education: Instructing students in areas of crop production, livestock management, soil and water conservation, food and nutrition education and many other areas of agriculture. Agricultural and food education improves the quality of life for all people by helping farmers increase production, conserve natural resources, and provide nutritious foods. There are four primary areas of agricultural education: elementary, vocational, collegiate, and general education. Elementary agriculture is taught in public schools and deals with growing and managing plants and animals and how soil is farmed and conserved. Vocational agricultural trains students for jobs in agriculture production, marketing, and conservation. College agriculture involves training of people to teach, conduct research, or provide information to advance the field of agriculture and food and fiber system. General education agriculture informs the public about food, agricultural trends and agriculture literacy.

Application: Applying agricultural competencies to current international agricultural practices.

Competencies: Standardized requirement for a student to properly perform a specific function after receiving appropriate instruction.

Course: A class offered in post-secondary institutions for graduates and undergraduates.

Curriculum: A course, set of courses, and subject specific content offered at a school or university.

Delphi Technique: A group forecasting technique that generally uses inputs from experts to guide and focus a direction of thought into a group consensus.

Discipline:

Email: A means or system for transmitting the instrument electronically.

Expert: A person that has a special skill or knowledge of a specific area.

Extension: A partnership of the federal, state, and county governments. They distribute information gathered by the land-grant universities and the United State Department of Agriculture to farmers, families, and students. County extension agents, located in most countries, train and support volunteer leaders. County agents and volunteers carry out extension programs through meetings, workshops, newsletters, radio, television, and local visits.

Faculty: Teaching and administrative staff that have rank in an educational institution.

Global: Pertaining to the entire system of agriculture education around the globe.

Institution: An educational establishment that is devoted to the promotion of a particular program.

International: Transcending national boundaries and encompassing two or more nations involved with agricultural education.

Knowledge: The body of truth, information, or principles acquired by mankind. A range of information or understanding of a specific content area.

Land-grant Universities: Universities that receive federal aid under legislation that followed the Morrill Act of 1862 which granted public lands to support agricultural and mechanical education. The three functions of land-grant universities are teaching, research, and extension.

Multiple Degree Program: A program that offers multiple degrees under a single heading. For example, an agriculture program may offer degrees in animal science, agricultural education, agricultural engineering, etc.

Objectives: A set of goals to be achieved by students in a course.

Participants: The experts in this contextual area.

Panelist: A member of a discussion or advisory group.

Post-Secondary: Referring to educational institutions beyond secondary education.

Researcher: A person who investigates exhaustively.

Respondents: The experts responding to this research instrument.

Skill: Using knowledge effectively and readily in execution or performance. A learned power of doing something competently. A developed aptitude or ability.

Theory: A specific concept or view stemming from a system of rules or principles.

Undergraduate: A student in a university who is studying for a bachelor's degree.

UN: United Nations.

Limitations of Study

Limitations were identified for this investigation and are listed below:

1. The method of collecting data was using email instruments. The accuracy of the responses were attributed to the individual's readiness to participate in the study, the thoroughness of answering the questions on the survey, and allowing the appropriate amount of time to complete each question.

2. Data was collected at the deadline for each round and analyzed.

3. The study was limited to individuals with experience in international agricultural education who were chosen based on their expertise in this field such as:

- Faculty members of agricultural education who teach undergraduate and graduate level classes within a university.
- Respected professionals within the international agriculture education community.
- Degreed professionals currently involved in working in international agricultural education.

If the panelists did not meet the above criteria, they were asked to excuse themselves from the panel.

4. The expert panel used for the Delphi study was asked to respond to the disciplines that should be included in such a course in a multiple degree program. The results of the survey were dependent on the interpretation of the researcher which led to the final outcomes and conclusions of this study.

5. The generalization of the results from this study will not reflect all areas of the globe that fall under international agricultural education.

6. The disciplines, competencies, and uses of the international agricultural education class will be represented only by the survey panelists taking part in the research survey.
7. The panelists were located across the country and from three continents. This made the time transition for each participant uniquely different from an international panel. Some panelists were on foreign assignments in other countries while taking part in this study. This could effect the time allotted by panel members to respond in an efficient manner.
8. The perception of the panel on the areas of international agriculture could be varied depending on their exact area of expertise in international agricultural education.

Assumptions

This study was conducted as an aid to designing an international agricultural education course that can be used in multiple degree programs for post-secondary institutions wanting to expose their students to global agricultural arenas. The researcher has made the following assumptions for the purpose of this research:

1. The panel believes that an international agricultural education course can be consistently offered to undergraduates within multiple discipline areas.
2. The members of the panel are experts in international agricultural education.
3. The members of the panel are a multicultural and professional group of participants with knowledge in this area of study.
4. The survey participants responded to each round in an honest and truthful manner.

5. The Delphi study is a compelling research technique and is an accurate means of measuring and acquiring a consensus in a group without interaction among group members.

Significance of Study

The knowledge that an undergraduate receives while working on a degree program is vital to developing competencies for employment. Those knowledge bases should reflect the completeness and global perspective that emerging agriculture undergraduates should possess in their discipline area. Students should have the international awareness and understanding of the concerns of agriculture topics from varying agriculture producing nations across the globe.

The difficult task is to introduce a vast array of international agriculture assumptions and practices in a course that is useful and meaningful to students. The curriculum for an international agriculture course needs to be selected with detail and examined for accuracy by the international community. The training that students receive in this course will give them life-long knowledge and awareness of the many facets of agriculture that exist in other parts of the globe. In order to meet the demands of the students and stay abreast of current trends in international agriculture, this course will use the results to conceive the best curriculum or inclusion of content for an international agricultural education course that can be used in multiple degree programs. This will enable stakeholders involved in developing content specific requirements for undergraduates in agricultural majors to broaden their scope of their existing degree requirements to include a global perspective.

Chapter II

Review of Literature

The purpose of this study is to identify what disciplines of agriculture should be included in an international agricultural education course at the university level, what competencies (knowledge, skills, and abilities) in international agriculture are needed by students and should be developed in a course in international agricultural education at the university level and how an international agricultural education class can be used in multiple degree programs at the university level. The review of literature for this study includes all components that add validity and begin the basic foundation for understanding the need for such a course. Understanding this type of study begins with the history and development of agricultural education. The sections of this review of literature are as follows: (a) agriculture education history that includes the beginning of formal agriculture in public schools, public laws supporting agriculture education, and the move into the existing era, (b) need for an international agricultural education course, (c) developmental components of an international agricultural education course, (d) integration of an international agricultural education course, (e) the Delphi technique, and (f) the summary.

Agriculture Education History

The early development of agriculture in the United States was first demonstrated by the Native Americans. It wasn't long before the early colonist began using foreign and domesticated crop production techniques to support their subsistence life style. The growth of agricultural education started around the late 1700's with the advent of community fairs and shows. The interest in exchanging ideas and production methods became a new way to transfer information from one individual to another. The local fairs and shows became a precursor to modern exchange techniques that have been developed into the extension system today. This information exchange became apparent and the government wanted to encourage the use of this type of distribution for all citizens.

The birth of the United States saw an increasing development in the food and fiber system within its states. George Washington, Thomas Jefferson, and John Adams understood the role agriculture played in the development of the new nation. Both knew the agrarian way of life was crucial to help sustain and nurture a young and developing country. Washington and Benjamin Franklin were concerned about the development of new forms of production and techniques associated with food and fiber production. They believed there needed to be methods to communicate to other interested parties on current acceptable practices in growing, maintaining, processing, and marketing crops. They soon began the Philadelphia society for promoting agriculture in 1785. This education and information society gave new leaders the means to categorize production research and experiments into a condensed format that could be shared with other leaders in the field.

The United States Congress created the Department of Agriculture to collect and distribute information about the country's agronomic stability. This agency would allow Americans to gather a larger perspective on the condition of the agronomic practices and production potentials from and for producers from around the country. It also introduced citizens to a wide range of information on many new systems, crops, and livestock that were in use across the country for the production of the nation's food and fiber supply.

As the country became more innovative in its practices, the federal government began to search for ways and means to establish a system of education and information exchange for its countrymen. In the early years, a system of information transfer was generally passed on from parents to their offspring or introduced by practicing a specific trade. It wasn't until one of the first agriculture schools was established in Georgia in 1734 that a formal introduction into the agriculture arts and sciences was practiced. Later, in 1821, a private school in Maine offered agricultural education classes (Hamlin, 1956).

As the high school agriculture education programs were beginning to take hold in American schools, the Morrill Act of 1862 became a new and important piece of legislation to the country. This act, also known as the Land Grant College Act, was a major implementation for the higher education development for the United States. Traditional colleges and universities based on the European system and design dominated most post-secondary institutions. Justin Smith Morrill identified this and the congressman from Vermont envisioned post-secondary schools that could educate students in agriculture, home economics, mechanical arts, and other professions that were considered practical arts at the time. His primary focus was to see that education was available to all

social classes and not just to the Americans that had the money to pay for a traditional form of education. There were several land grants but the first one was passed in 1862. Abraham Lincoln signed the first on July 2, 1862. This gave each state the right to select 30,000 acres for each senator and representative in the state. The land was then to be sold and the monies placed in an endowment that would supply support for the colleges in each of the states. The land grant legislation has helped improve the lives of millions of Americans.

In the South, racial equity was not yet achieved. The Act had helped those not held back by race but had inhibited the development of all Americans. Blacks were not allowed to attend the original land grant institutions. There were provisions in the original Act but only a few states were interested in setting up any institutions. The second Morrill Act was passed in 1890 and increased the system of grants to include black institutions. The Act granted cash instead of land as in the 1862 Act but the new principles were applied to the 1890 Act and were deemed land grant status. The same conditions were applied to the 1994 land grant colleges for Native Americans. The same terms were applied for the Native American land grant colleges as the 1890 Act.

This Act has made higher education available to all people. It changed the course of study from classical areas to practical areas that could be applied to the careers in which they would face once leaving the classroom. It also gave education support directly from the government and provided much needed resources for expanding the post-secondary educational institutions in the country. This type of funding has allowed for the development of facilities and curriculums that have allowed students to participate in

studies that not only encompass American ingenuity and design, but international agriculture trends and structures.

Agricultural science, business, and education expanded after 1900 in regards to a need for more knowledge in technical understanding and skill for new approved practices. This development led to the use of modern farming methodologies that required fewer farm workers. This resulted in the creation of larger farms and ranches. This development increased the need for more agriculture education.

The continuation of agriculture class offerings continued through the passing of the Smith-Lever Act of 1914. This federal law established a system of cooperative extension services connected to land grant universities in order to inform the public about current trends in agriculture. In 1917, congress passed a second piece of legislation that allowed the teaching of “vocational agriculture” in public schools to prepare those who would enter production agriculture. Federal funds were dispersed to support this initiative. Agricultural education classes that were being taught prior to the Smith-Hughes Act now had the funding to push their programs into the modern era to accommodate a changing economic condition in the United States.

Most rural areas did not have high schools like the larger schools in the cities. The drop out rate for the rural students once they entered a high school was becoming an issue. The rural students had to travel to the nearest town or city to attend these high schools and they usually did not make it past their second year. The vocational training they received in the first two years of their high school experience allowed them to gain

knowledge and skills that could be placed into practice when they returned home to farm. The courses they studied were focused primarily in crops and livestock. It wasn't until the period of the depression that other classes were being offered to eleventh and twelfth grade students who were more advanced.

It wasn't until 1960 that agriculture education made yet another change to its student audiences. The changes and information processed to these students had made an impact on production potential and changes in market allowances. The Vocational Education Act of 1963 and its amendment in 1968 expanded the role of agriculture to include many non-traditional areas. The Carl D. Perkins Act of 1984 allowed public school to broaden their scope from traditional production practices to encompass technology and modern research practices into their programs to enhance skill development and learning. The progress and development of the new technologically advanced agricultural education program has allowed the embodiment of new areas for curriculum to be taught. No longer is production agriculture the primary source of education. It is the biotechnology and computer enhancements that have come along with the new change in teaching agriculture that has pushed this modern day vocational curriculum into an exciting fast-paced study in the world of agricultural and leadership development. "Agrarianism now, as in the past, remains more myth than reality", (Hurt, 1994).

Need for International Agricultural Education Course

The history of agriculture begins outside of the United States and from the development of Italian, Scottish, and German colleges. Each country has adapted its information programs to meet the needs of its population. Although agricultural education resembles the education used in other countries, its distribution systems are somewhat different. The dissemination of information on agriculture is done through youth organizations, extension systems, secondary agriculture programs, post-secondary education programs, adult education classes, apprenticeships, and through governmental agencies. Is this exposure enough? How much exposure do these individuals get from participating in these types of clubs? Does the internationalization of information take place in all these areas or just a few? There are examples of agricultural education being used in many parts of the world. The United States uses 4-H and FFA organizations to disseminate information and practices to its participating members. Both organizations have the ability to expose members that are not directly related to farming practices to production principles and philosophies. Canada has its own 4-H programs as well. Canada distributes information on farming practices and has established experimental farms and research stations throughout the country. Australia has several experimental stations in each state and an extension service similar to the United States. Even Great Britain has a program of youth clubs called Young Farmer's Clubs that resemble 4-H. The FAO (Food and Agriculture Organization) of the United Nations trains individuals all around the globe on new and existing farming practices. The United States assists farmers through AID (Agency for International Development) on technical data for

developing nations. Just using these avenues to suggest the needs for a world view for post-secondary students is not enough. How can students be expected to compete in a global society without the present knowledge of what has or is taking place outside their front door? Using current information sources from clubs to experiment stations to guest speakers to communication links from satellites is not enough to solidify the global understanding for post-secondary students.

International education has received additional attention in recent years. It is believed that events around the world have caused the educational professions at all levels to give serious attention to the internationalization of various types of educational programs (Hossain, Moore, & Elliot, 1995). The need for developing a course to ensure that students are exposed to more than continental agriculture will help ensure students are treated to a worldview of agriculture. The diffusion of knowledge from local agricultural education to a more global perspective should open up their pathways for gaining a global understanding of agricultural education. It is simply not enough to expose students to international agricultural education applications through social clubs and networks. International work and internationalization of extension is not always seen as a priority by some in extension and by some local officials (Vergot, P.V., et al., 2006). Post-secondary institutions need to take an active developmental role in designing classes to meet the student's needs of exposure to global agriculture. The necessity for the course is suggested by Zhai and Scheer (2002) in their study on the influence of study abroad programs on agricultural college students. They note that study abroad programs have become the most visible and popular international activity to enrich and broaden the

students' global competency at college and university campuses across the United States. The students that participated in such activities had a more general acceptance of self and others after returning from their experience. They felt like they had matured upon their return and had gain more independence from the experience. They also noted that they had a higher level of acceptance of responsibility. The experience had changed not only their informational systems of global agriculture, but also their personal perspectives on their opinions on the openness of people from other cultures with differing views and expressions on cultural diversity and world wide situations. It was surprising to find that only 2% of students take advantage of study abroad experiences (Hutchins, 1996; Scott, 1992; Burn, 1980). Study Abroad programs help students develop the skills and attitudes that will allow them to function successfully in an independent society (Zhai & Scheer, 2002).

The needs to build a course in international agricultural education should also be used to assist students in building their own pathways of increased growth using the knowledge they gained through taking such a course. In a test and data driven society that uses numbers to rate the understanding of students knowledge in core subjects like math, english and science, how are students suppose to gain exposure to the global society if it is not emphasized in secondary or post secondary institutions? If there is little or no instruction in this area in secondary schools, how can students be expected to automatically express favoritism to taking an international agricultural education course without any prior exposure? Symons and Cvancara (1990) suggest that the reason for integration international concepts into secondary agricultural education programs is based

on the always changing atmosphere in high schools, the global economy, and the students enrolled in those classes. They admit that the curriculum in many schools does not have an international component. McCracken (1995) identified that students need to have an understanding of the major producing and importing countries of the world. He stresses that students need to have a firm grasp on agricultural products and products that impact agriculture from around the globe. In the need for students to be prepared for understanding the global agriculture industry, colleges of agriculture are now internationalizing their curricula (McCracken, 1995). Knowledge is power. The more knowledge that students can gain in the post-secondary environment will only make them more marketable during and after they leave their college academic careers behind.

Developmental Components of International Agricultural Education

America's future rests on its ability to understand and compete in a world which year-by-year moves rapidly toward economic, political and social interdependence, Ping (1990, p.27). This suggestion leads one to believe that the objectives of the international education course should be established to educate the students to look at the world with a global mindset. The responsibility to internationalize educational curricula has become a recurring topic over the last 30 years (Wingenbach, G. J. et al., 2006). The developmental components of an international agricultural education course should include the following: 1. teachers developing a basic understanding of global and national issues and interdependence among nations, 2. educational programs that stress the impact of global perspectives on U. S. agriculture, 3. incorporating international experience programs into student degree programs and, 4. building a link between the university mission and the

student's degree program. The class should also be able to be utilized in multiple degree programs at the university level. Not only is the curriculum important to analyze, but also while going through the act of redeveloping the departmental major, one should evaluate what might be lacking or added to provide more beneficial teaching methods (Finch & Crunkilton, 1989).

Teachers developing a basic understanding of global and national issues and interdependence among nations are one area that can help in establishing the foundation of knowledge bases for a global agricultural education course. However, the lack of an international vision by professors and university administrators regarding the need to develop courses to internationalize the curriculum is still a major barrier (Etling, 2000). University courses should change to reflect the diverse population in which they serve. Ultimately, the agricultural industry needs graduates who are globally competent so they can work expertly in other cultures and countries (Platt, 2004). Educators should make a concerted effort to update students as the world changes around them. The class should not focus solely on past experiences but how the current change in the global agriculture realm is taking place. This will allow for a cutting edge approach to teaching international agricultural education. It makes the course fresh and attractive for all students that attend the class. The content of the course should be global to stress the importance of the intertwining of America's agronomic processes with the rest of the world. The United States can no longer focus on its own production potential as it shares its hardware and software with nations from across the globe. We can no longer live in the bubble inside our own borders. The U.S. derives income from foreign nations in

agricultural and non-agricultural products that play into the competitive atmosphere of all Americans. Encouraging students to think in a broader manner not only takes quality instruction from faculty, but also the student to take an active role in exploring international agriculture. Students who participate in travel abroad experiences, culture diversity programs, and distance learning exchange programs can enhance course content. It is important for the students to fully understand the complexities of the agronomic society of the world so they may make value-based decisions on the role they play in the marketplace. This is why the curriculum in the course should stress internationalization based on the interdependence of the global economy.

It is important to examine educational programs that stress the impact of global perspectives on U.S. agriculture. Kerr (1991) envisioned a global community of higher learning in which each university's unique strengths should be accessible to all aspects of a single learning system. He discusses a model university in which national understandings and universal learning are united to include another element which explicitly leans towards internationalization for the purpose of higher education. Given the importance of food production systems in developing countries, and the need for cultural knowledge and global contextual understanding, it is surprising that the number of agricultural students participating in study abroad programs is not much higher (Bruening & Frick, 2004). It is important for university students to gain an international perspective if they are going to become functional thinkers and progressive citizens of our ever shrinking planet. How many more successful approaches could be developed and handled through education or politics if Americans took a vested interest in the

culture differences and perceptions of those populations in other countries? If students had the chance to be exposed for just one course in international agricultural education, they might understand these cultures and see the possibility of career pathways that could be available upon graduation. It is not acceptable to examine just the career opportunities within our own borders but to examine the possible future career options outside our borders. There are many agriculture related occupations that lie in other countries where agriculturists are in need of assistance of marketing, distribution and development of new products and practices. This may increase the standard of living for families in underdeveloped countries, countries with limited resources, and nations on the cusp of becoming consistent producers of agriculture goods and services. The role of public and private extension systems with nongovernmental organizations may also help in developing the curriculum. Private sector firms and nongovernmental organizations (NGO's) have become important alternatives to public extension in providing technical inputs, information and training, and organizational support services to farmers and rural households (Swanson & Samy, 2002). This collaboration may assist in the development of instructional materials for the developing course. The public systems develop and share information based on their research and findings. The private firms have been increasing their information sharing systems with their clients more frequently over the past few decades. This allows the firm and the consumer to become more intimate with the product and use it in its intended form.

The changing role of the U.S. in the world demands that average citizens, as well as public officials, politicians, and business and industrial leaders, develop a better understanding of the international world (Smuckler & Sommers, 1989).

Incorporating international experience programs into student degree programs is possible with the assistance of support for the teaching instructor, department and the university. According to Kerr (1991), the modern university, wherever it may be in the world, represents a new convergence of national purposes for higher education with one foot planted in the nation-state and the other in the pursuit of pure knowledge. If we accept this point of view from Kerr, then the universities that provide an education to U.S. students need to incorporate an international experience into the students' degree program. If higher education is going to continue to expand the minds of its students, then international knowledge should be a part of the changing curriculum.

The international experience can be offered in many forms. A traditional travel program could be offered as well as using current technologies to gain the experience of the trip but utilize video-conferencing, web communication, and outreach missions. Study abroad in a non-English speaking environment provides valuable ways for students to gain experiences they need to make progress in seeing how others live, work, and learn (Acker and Scanes, 1998). Direct contact with different cultures needs to be experienced and not learned in a sterile classroom environment (Cooper, Beare, & Thorman, 1990). Andreasen (2003), noted efforts to increase faculty participation in an international endeavor should be of great importance for Colleges of Agriculture around the world.

The Foreign Agriculture Service (FAS) in the United States Department of Agriculture is a good example of opportunities and careers that need to be explored and discussed in the development of the course. The FAS works to improve the development of foreign markets and the competitive position for U.S. agricultural products. Its primary responsibility is to handle the USDA's international affairs. It is involved in trade agreements, negotiations, market development, and gathering statistical information on agricultural issues. The agency also provides food and aid as well as technical assistance to foreign countries. Identifying this type of service in the course may prove to be valuable information for students that are unaware of the role the FAS has in working with other nations.

Another organization that is linked with international agricultural development is the Food and Agriculture Organization (FAO) of the United Nations. The FAO is one of the world leaders in the effort to defeat global hunger. They serve developed and underdeveloped countries and use their talents to negotiate equity among within nations so agreements and debates can take place that are fair for all parties involved. They provide a knowledge base and a wealth of information for a diverse background of agriculture practices. Their special focus is for developing rural areas which is comprised of 70% of the world's underfed population

Building a link between the university mission and the student's degree program may seem difficult at first, but the realization of the global market place and its affect on everyone should garner respect and a more dedicated effort. International components are essential, integral, and central to the education, research, and outreach mission of the

university (Acker & Scanes, 1998). Internationalizing the land grant university is an important mechanism to build human capacity in order to manage sustainable development (Duffy, Toness & Christiansen, 1998). In order to accomplish all of these areas, there needs to be a change in the manner in which the university develops their courses. Borg and Gall (1989) noted that attitudes generally consist of three components: affective, cognitive, and behavioral. The affective attitude is mention in respect to an individual's feelings about the attitude object. Does the individual understand the issue? Is the individual aware of his/her feelings assumed with the object? The second attitude, cognitive, is the individual's beliefs or knowledge about the attitude object. Does the individual have an established belief about the object? Has he or she been allowed to form their own belief system on the object or has it been pre-established? The third attitude, behavioral, is the individual's predisposition to act toward the attitude object in a particular way. What will the individual say or do when the object is proposed to him or her? What will he or she conceive when the object is introduced? Utilizing these three attitude issues may help establish a means for introduction of the components for the international agricultural education course. Adding relevant international examples in coursework represents the first level of students' academic awareness, (Breuning & Shao, 2005).

Integration of International Agricultural Education

Once agriculture education had become solidified in America, it was up to its teachers and recruiters to help establish the modern day agricultural education program into a functional portion of the secondary and post-secondary institutions. A major

challenge facing agriculture instructors is how to integrate the international component into their curriculum. Understanding globalization and operating with a global perspective is especially critical if U.S. land-grant universities are to realize their mission and serve their constituents (students, faculty, staff, and citizens) in this global age (Etling & McGirr, 2005). The commission on Global Education (1987) reports that schools are not responding fully to the need to educate students for citizenship, nor were they recognizing the global demands which would be expected of U.S. citizens in the future. Since the report, Ibezim and McCracken (2000) found that teacher's attitudes towards integration of international concepts may be dependent upon their exposure to international agricultural concepts. The teachers that may not have had much exposure may not be as willing to teach these principles in the classroom. The teachers that exhibit a higher degree of awareness would be more likely to internationalize their agricultural instruction. By internationalizing their agricultural instruction, it sparked students' interests, revitalized agricultural education programs, and most importantly provided students with a more complete picture of agricultural education (White, 1990). Studies have reported that professionals that have experienced international enrichment have increased international awareness and understanding, incorporation of international components into extension programming, improved self-esteem, and many have profited from renewed interest in their extension career (Place, Jacob, Andrews, & Crago, 2002). In order for teachers to develop this type of innovation, there needed to be a set of variables established for implementation. Plomp and Carleer (1986) organized three sets of variables for implementation of an educational innovation. The first variable is foundational. It involves school and state support, favorable teacher attitude, and

sufficient teacher experience. The second variable is the importance at the beginning of the innovation to include the teachers' knowledge of the topic, contact with other teachers, in-service training, and material resource. The third variables are teacher participation and initiation of structure into the course, and planning for the innovation to be implemented. The current teachers of courses that have international agricultural experience and use it in their classes have found it easier to incorporate than if they had no experience.

The secondary agricultural education program has three integral, intra-curricular components: classroom/laboratory instruction, experiential learning through supervised experiences, and FFA (Dailey, Conroy, & Shelley-Tolbert, 2001). By using these three components, integrating an international course into the curriculum should make a smoother transition. Offering a class on the post-secondary level, using the same model may be more difficult. All universities do not incorporate collegiate FFA programs and traditional SAE programs for each student to participate. So, introducing an international component into the mix that would cover such a broad range of course choices and directed areas of study, makes for a daunting task. In other words, the "package" is not so easy to integrate if you had the same three curricular areas to work within as secondary agricultural education. It will take the cooperation of the instructors for the course to focus on the global aspect of the class and make it reachable for the students. Ludwig (2007) noted that one measure of excellence for a faculty member is to demonstrate that one's research has a global impact. With the work that a faculty member is sustaining in the classroom, their research should be including the international component. This must

be viewed as going beyond publications to include stakeholder based research, strategic implementation and global advocacy (Ludwig, 2007).

Many programs in education and agricultural education can contain information on international agricultural education. It is not an exclusive topic that eludes all areas of education. Having the ability to assess current needs in agricultural education curricula in the post-secondary realm is necessary in order to keep pace with the changing global need for food and fiber. Evaluating the curriculum of a class or core classes to locate the areas in which international agricultural education are discussed is key to determining its implementation into the intellect of post-secondary students. Many universities and colleges have been examining the international dimensions of their programs and have concluded that the process of internationalization of the curriculum is a priority (Henson & Noel, 1989, p.17). Evaluating the content of classes offered that include global content should help assess the education of post-secondary students on changes outside their own environment. Gelatt (1993) said “Change itself has changed: It has become so rapid, so complex, so turbulent, and so unpredictable that it is now called ‘white water change’” (p. 10). Evaluating the agricultural education curriculum must change to keep in pace with the modality of today’s student learners. One of the faster trends in education is the transfer from the classroom to web based environment for interaction and completion of course work. Virtual international experiences may offer an alternative to expensive study abroad classes and serve as a way to integrate international experiences into the broader agricultural curriculum (Boyd, Felton, & Dooley, 2004). The program can be evaluated by using many techniques such as focus groups and quantitative and qualitative research methods. National studies may call for change, state and national accrediting

agencies and may require institutions to redefine their goals and to determine whether or not they achieve them; and students, faculty, and staff may proclaim that improvements are needed; however what happens in the classroom will in the long run, determine whether these improvements take place” (Diamond, 1989, p. 1). Evaluating the program or the class does little good if the effects of the results of the evaluation are not placed into practice in the classroom. In the paper presented by Chumakov (2006), it is noted that land grant colleges of agriculture have set strategic goals to enhance the student learning experience to ensure society-ready and global-ready graduates.

According to Reaman and Etling (1990), educators that have experience in international teaching, travel, and curriculum development have the knowledge to begin integrating internationalization into their existing courses. Educators who were involved in international programs tended to have a more positive attitude about international educational programs and were more likely to integrate international concepts into their curricula than those without such experience (Peuse & Swanson, 1980). They suggest that current teachers with international experience that teach courses that have international agriculture in their classes, have found it easier to incorporate than if they had no experience. Dormody and Kelsey (1995) established motives for some professionals participating internationally were found to be intrinsic and extrinsic. Their study found that important motives for participating in international activities included cognizance, exposition, play, nurturance, simulance, achievement and affiliation. The faculty that was highly motivated in an international experience also displayed the ability to learn, teach, achieve, help others, and be with people. Getting faculty to incorporate international agricultural education into a curriculum is dependent on satisfying the

motives for the introduction and reducing barriers for their participation. King & Martin (1995) examined the infusion of a global perspective into the curriculum as identified by the faculty at the college of agriculture at Iowa State University. Their conclusions found that there was not a presence of global curricula in the college of agriculture, faculty members felt a need for students to gain a global perspective, there may or may not be a necessity to add a global perspective as long as the students acquire this perspective at the university, teaching strategies have a utility in the process of adding a global perspective, a small range of student learning activities form the international infusion effort, and faculty members' international experiences have a significant impact on adding a global perspective to the teaching of technological agriculture. It is inherent from their study that the diffusion of international curricula into college courses is needed. The classes should take a look at the global inputs that contribute to the inter workings of the nations college curriculum. To boost involvement, faculty may have to encourage themselves and students to engage in international projects and experiences and use those experiences in their teachings. The university should also foster the international experiences among all departments within the college of agriculture and develop strategies to incorporate international programs into the course offering. If undergraduate students wish to obtain international perspectives in their agricultural studies programs, then study abroad, although it may be costly and require planning, is likely to be the most effective option (Brooks, Frick, & Bruening, 2006).

What should be included in an international agricultural education course?

According to Breuning and Shao (2005), they identified the highest rated international agriculture topics that should be taught in an international agricultural education course.

Among the top five results were: role of agriculture in economic development, globalization and the implications/affect on agriculture, the role of culture in agricultural international development, definition of a developing country and developed country, and agricultural extensions and education systems in different countries. Their identification of these areas supports the lack of development in current curriculums. Their study also identified teaching methods that could be used to address the topics chosen. The top five included experiential learning, presentations and dialog, field studies, field trip in country, and case studies exercising the way students think in different ways.

Regardless of a student's current knowledge or attitudes about international agricultural issues, the need for students to have broader perspectives is evident (Wingenbach, Boyd, Lindner et al., 2005). Their study suggests that the integration of an internationalized curriculum must be more than any simple paper or document stating that this effort must take place. It must be pursued in an active form through participation in and attitude changes toward the view of international agriculture. At Utah State University, they offer a Master of Science degree for international agricultural extension specialist with an emphasis in administration. As this degree has the student working directly with an international component, it limits its audience to the students that are only searching for a Masters in this field. It does not expose the entire undergraduate or graduate population to international agriculture. The degree prepares students for positions in international agriculture with an administration emphasis. Although the goal of the research was identifying recruitment and retention within the program, it also identified a need for a student organization within the College of Agriculture. The international agricultural students perceived a need for an international student

organization (Egelund, Sleight, Miller, & Straquadine, 1995). The development of such an organization could assist in developing the course for students to enroll.

The National Council for Agricultural Education initiated a program that uses international agricultural education that can involve educators at all levels of instruction. There readiness to identify the need for expanding the global perspective of the students in agricultural education has come to the forefront of there discussion. Symons and Cvancara (1990) mentioned that the rationale for integrating international concepts into secondary agricultural education programs is rooted in the changes taking place in high schools, the global economy, and the students themselves. They saw the realization of the lack of international components to the programs at the secondary level and noted the need for additional changes for students, teachers, and their curriculum. As noted by Acker & Scanes (1998), in order to maintain high quality programs, education methods should be evaluated for effectiveness, relevance, and impact.

Supplying the needed global interaction for students in the post-secondary level will only lead to a much broader scope as they work through their academic endeavors. The integration of international agricultural education into a course guide will not be an easy task but one that can be accomplished if the shared goal of globalizing the world view of university students is to be accomplished.

The Delphi Technique

The Delphi technique is an organized effort to gather an expert opinion in a systematic order to produce useful results. The Delphi technique was developed in the 1950's by Olaf Helmer, Norman Dalkey, and Nicholas Rescher. These pioneers were involved in Project Rand and were looking for an evaluation technique to dive into the intellects of a select group of experts and gather data from their responses. The method has been used with various modifications through the years (Sackman, 1974). Unlike other techniques, the Delphi does not require face-to-face participation (Linstone & Turoff), 1975). It uses a series of questionnaires for the participants to complete and the researcher to gain feedback. The feedback is used to develop another questionnaire to re-submit to the participants until a consensus is reached. It can be used to develop alternatives for community growth, economic impact, generate agreement on an issue, correlate informed judgments on a subject, educate respondents on a diverse element or topic, etc.

The Process

The Delphi begins by developing a questionnaire that focuses on an identified problem. An expert group of panelists that have extensive knowledge of the problem are then mailed a copy of the questionnaire. Each participant answers the questionnaire individually and returns their answers to the researcher. The responses of all the panelists are summarized and then a second questionnaire is issued to the panelists. Once the second round of questionnaires is received by the researcher, the panelists rate the

priority of each idea and are sent back to the research a second time. This process is repeated until the researcher feels the positions of the panelists are firm and a consensus is reached. The advantage of using the Delphi technique includes: allowing the panelists to remain anonymous, freedom of social pressure, outside influences, inexpensive, reliable forecasting, conducive to independent thinking, reach consensus among hostile groups, etc. Some disadvantages of using the Delphi group include: judgment of the selected group of panelists may not represent the entire population, extreme opinions may be eliminated, middle-of-the-road consensus may result, time consuming, not a total solution to forecasting, requires a skill for written communication, requires adequate time and dependency of panelist response. The majority of the use of the Delphi technique in Agriculture education has been in curriculum development; however. It has also been widely used to determine essential competencies in many fields (Martin & Frick, 1998).

Summary

Agriculture education in the United States has to keep adapting to the changes taken place in the nations around us. If we do not, the students preparing to enter the workforce may not be very knowledgeable on the global agriscience contributions from countries around the globe. Students need to be prepared to analyze the history of past agriculturalists and national reforms with new developing technologies from within our own boundaries and from abroad. A single course offered to undergraduate students to cover such a broad area from around the globe will not lend itself to divulging each and every concept of their agronomic stake in the marketplace, but could reveal a broad range of principles and practices that students could gain an understanding of the typology of

the foreign market place. The need for such a course will be evident in the future as the global agriscience markets become even smaller. The need for understanding for trading and policy will be more effective if our knowledge is enriched with a basic understanding of the marketplace.

Integrating this course into an undergraduate program will need to be accomplished with a joint effort from all departments within the schools/colleges of agriculture. Its multidisciplinary needs can be beneficial for all majors in the field of agriculture. The curriculum will need to be appropriate to gain the interest of all the students in the school of agriculture as to peak their interest. The class would need to be developed to cover a wide area of subject matter in order to attract the attention of all the undergraduates. This will be important as the objectives of the course will be determined to accomplish the tasks. The course should examine the basic understanding of global and national issues and interdependence among nations, educational programs that stress the impact of global perspective on U.S. agriculture markets, incorporating international experience programs into student degree programs, building a link between the university mission and the student's degree program, and personnel evaluation among faculty teaching the international agricultural education course content.

The needs for building such a course come from the development of courses in other cultures on the agronomic policy and production practices that take place in the United States. If other countries have a firm grasp on the networking and skills that the U.S. uses to make value judgments and decisions on American agronomics, then U.S. students must be exposed to the same type of information so they can also fully understand the position of other countries on their agronomic applications.

Chapter III

Methodology

The purpose of this study is to identify the discipline areas of study that should be included in an international agricultural education course, identify competencies that should be attained by students that complete a course in international agricultural education, and utilization of an international education course in multiple degree programs within a post secondary institution. This class would be offered to students enrolled in land grant institutions to further develop their understanding of the impact the global market place has on their everyday lifestyle.

Research Questions

In order to identify the areas of study, competencies, and multiple discipline approaches, the following questions were asked:

1. What disciplines of agriculture should be included in an international agricultural education course at the university level?
2. What competencies (knowledge, skills, and abilities) in international agriculture are needed by students and should be developed in a course in international agricultural education at the university level?
3. How should an international agricultural education class be used in multiple degree programs at the university level?

Research Design

Patton (1990) defined the purpose of using qualitative data collection as an attempt to understand naturally occurring phenomenon in their natural setting. The Delphi technique was developed as a methodology to elicit expert opinion in a systematic manner (Sackman, 1975). The Delphi technique will be used to gain the most comprehensive results in this study. The Delphi method is used in order to develop a consensus within a group of people on a particular issue without bringing the subjects in personal contact with each other (Akers, 2000). In a Delphi study, the group of experts will have a variety of opinions about the issues being addressed. Once the Delphi is completed, the group should have reached consensus on the issues being studied. The number of rounds in a Delphi can be predetermined or until a group consensus has been achieved. The rounds that may be involved may depend on the nature of the study. A typical study usually consists of two or three rounds. This study will use three rounds and identify each round as round one, round two, and round three. The panel selection will consist of faculty at post secondary institutions selected from a diverse list of professionals with an expertise in international agricultural curriculums.

The Delphi method is reliable when an expert panel has at least 15 members and is a true representation of the expert community (Dalkey, Rourke, Lewis, & Snyder, 1972). It will be vital that the panel members have a vested interest in the study and are motivated to complete the process from beginning to end. The panel will be recruited by defining what an expert in international agriculture education is, attaining a list of potential panel members through nominations from Dr. Brashears and Dr. Wingenbach, and trimming the list to a manageable number of 15-25 and securing their commitment to

take part in the study. The participants will be given an identification number known only to the researcher to ensure anonymity. The data will be recorded using the distributed identification numbers. A six-point Likert-type scale will be used after round one for round two and round three.

University faculty in the Department of Agriculture Education at Texas Tech University will validate the instrument used for round one. A pilot test will be performed to reduce error using panel members that were selected as the target population but not part of the sample population.

Subject Selection

The subjects were selected from a population list of professionals that were involved in international agricultural education. All respondents were professionally associated with a university with education or extension education. This target population was chosen as these are the current professionals working in agricultural education that have or had experience in international education with curriculum, course development, extension, and research. Choosing these individuals also allowed for the direct development of a course that was germane to their area of expertise. The solicitation of these types of professionals was due to their strict experience with international agricultural education. Their work related involvement and experience would bring a wide arrange of responses to the acquisition of this research. The panel consisted of members from universities with extension and education experience from cross the globe.

The public list of potential participants was gathered through public posting of members through professional organizations. The individuals selected were contacted

through a written invitation through email addresses listed on professional association websites. Participants that agreed to the study were from:

1. Arizona University
2. Botswana College of Agriculture
3. Bunda College of Agriculture
4. Charles Sturt University
5. Delaware Valley College
6. Montana State University
7. Ohio Sate University
8. Penn State University
9. Texas A&M University
10. Texas Tech University
11. University Cape Coast
12. University of Florida
13. University of Georgia
14. University of Swaziland
15. Washington State University

Initial contact was made for each subject on January 10, 2008. The contact was an email of a letter inviting the subjects to participate in the survey research group. Each subject was asked to respond by email if they accepted to participate in the study. Each was also asked to return a current email listing, if different than the current listed address. Once being selected for the group, the subject was asked if they wanted to receive materials via email or a current mailing address. Both options were presented to the

subjects to make their participation easier and with less stress. After consideration, 15 subjects agreed to participate in the study. Each subject determined that they would like to communicate via email as each had the technical capabilities to do so. The group consisted of fifteen experts in international agricultural education and was based from points across the globe. They were located in: College Station, Texas; Doylestown, PA; University park, PA; Athens, GA; Tucson, AZ; Bozeman, MT; Gainesville, FL; Lubbock, TX; Cape Coast, Ghana; Columbus, OH; Sebelle, Botswana; Zomba, Malawi; Pullman, WA; Swaziland, Africa; NSW, Australia.

Reliability/Validity

The questions for the round one instrument for the Delphi Study were validated for content, stability, clarity, and appropriateness by a panel of faculty members in agriculture education from Texas Tech and Texas A&M Universities. The faculty members listed items that needed to be addressed and make the first round as accurate and productive as possible. None of the individuals that evaluated the first round instrument participated in the Delphi Study.

Instrumentation

The technique used for this study was the Delphi Technique where three rounds were utilized. In the first round, the questionnaire contained three questions for the panel members. The first round contained open ended questions for each panelist to answer. They were encouraged to reply with as many responses as they deemed necessary. In the second round and third rounds, a six-point Likert type scale was used for each of the responses obtained from the first round. The second and third responses were narrowed from the preceding responses to tighten the responses from an area of broad terminology

and to an area of narrow terminology. This assists in refining the instrument to encourage the convergence of responses to the most accepted responses from the panelists. The three-round technique was used as results from four or more rounds show little change from the third round results and participants become disengaged due to repetition (Linstone & Turoff, 1975).

Each round was administered by email and the data was collected and analyzed. Responses from round one were listed and used for round two and round two were used to create round three. Consensus among the Delphi panel members were set a priori and defined when the response rate was two-thirds or higher for each of the questions in round two and three.

The panelists in the process were guaranteed anonymity. A numerical code was given to each of the members to use as a source of identification so their responses would remain confidential, yet allow the researcher to track each of the members. All emails sent to the panelists were sent individually and could be attained individually by initiating the survey through the link provided in the email. They were also informed that they could send their responses via paper mail if they felt this was a more accurate representation of their participation or they may have felt participation through email may have confidentiality concerns through an employer or another interested party trying to access their email.

In an effort to help control non-response bias, the researcher used reminder emails and messages to encourage their responses. Replacement questionnaires were sent if needed to assist the panelists in completing the rounds.

Data Collection

Round I

The fifteen panelists that agreed to participate in the study were sent separate email notices stating their participation requirements, objectives, and the requirements for participation. The Round I email asked the respondents three open-ended questions. The panel was asked to respond with as many statements as they deemed fit to complete the question. The questions were: What disciplines of agriculture should be included in an international agricultural education course at the university level?, What competencies (knowledge, skills, and abilities) in international agriculture are needed by students and should be developed in a course in international agricultural education at the university level?, How should an international agricultural education class be used in multiple degree programs at the university level?

The panelists were given four weeks to complete first round. After the first two weeks had past, a reminder email was sent to the participants that had not yet returned the Round I questionnaire. Fifteen of the original fifteen panelists responded to the first questionnaire for a response rate of one-hundred percent.

Round II

The researcher analyzed the statements recorded by the panelists in Round I. When commonalities were found, they were combined to form similar statements. Combining the similar statements resulted in 89 first question statements, 110 second question statements, and 22 third question statements. These statements were used in the third round to re-examine the panelist responses that were not chosen in the second round to see if they would be included in the third round.

In Round II, a six-point Likert-type scale was used to allow the panelists to rate their strength of agreement with each of the statements. The Likert-type scale was utilized assigning a 6 to “Strongly Agree”, 5 was assigned “Agree”, 4 “Somewhat Agree”, 3 was “Somewhat Disagree”, 2 was “Disagree”, and 1 was “Strongly Disagree”. Eleven of the responding 15 panelists from Round I responded in Round II. Round II data was analyzed using SPSS 12.0 for Windows software as well as Microsoft Excel software. Descriptive statistics were used to summarize the data.

Round III

The objective of Round III was to develop consensus among the panel members. The panel members were sent a third email containing the next instrument for their review. The panelists were asked to re-evaluate the revised instrument containing any statement for reconsideration using the same Likert-type scale. This allowed participants to re-examine a possible statement for consideration for each of the three research questions. From Round II, 186 statements that were not selected were asked to be reviewed by the panelists for re-consideration for consensus by the panel. The same Likert-type scale was used for each of the statements. The statements were listed under each research question as was accomplished in Round I and Round II. Consensus was derived from the two-thirds panelists responding to all three rounds.

Chapter IV

Results

Introduction

The purpose of this study was to develop a list of discipline areas, knowledge, skills and abilities, and uses for an international agricultural education class at the post-secondary level. International agricultural education professionals that have experience and knowledge of international agriculture were solicited to participate in this study (N=15). The panelists participated in a Delphi Study that consisted of three rounds that began in January 31, 2008 and ended July 15, 2008. The statements used in each of the rounds can be viewed in Appendix B.

Three questions were submitted to the panel and responses by each of the panel members were then recorded for each question. The statements were then recorded under each question and then were selected by each of the panelists using a Likert-type scale as to their level of acceptance. The data was collected and analyzed to determine consensus or non-consensus for each of the statements. Round I surfaced 221 statements. Round II statements yielded 23 consensus statements and 110 non-consensus statements. Round III did not yield any additional statements for consensus thus eliminating the need for a Round IV. The final number of statements that reached consensus was 23 of the original 221 statements. (Table 1).

Table 1: Description of the Delphi Panel Acceptance, Time Line, and Consensus of Statements from Delphi Rounds I, II, III.

| | Round I | Round II | Round III |
|-------------------------------------|---------------|----------------|----------------|
| Panel Response Questionnaire Mailed | 15 | 13 | 12 |
| Completion Date | Jan. 31, 2008 | April 30, 2008 | July 8, 2008 |
| Statements Generated | Feb. 28, 2008 | May 20, 2008 | August 1, 2008 |
| Consensus Statements | 221 | - | - |
| | - | 23 | 0 |

The Delphi Panel

The Delphi Panel consisted of experts from many parts of the globe. Each member was selected for their expertise in international agricultural education along with their worldview knowledge based on their current educational assignments. Table 2 illustrates more demographic information on the expert panel. The number associated with the panelists in Table 2 was not the coded response number used by the researcher to gather responses.

The panelists were also asked to answer some demographic questions related to their professional experience. Table 3 illustrates this information. The panelists were asked to describe the population which they serve on a daily basis in their profession over a single semester. This number would represent the number of people that the expert comes in contact with on a daily basis based on their description as a professional in their field. The years of experience they have in agriculture relates to the number of years the expert has been involved in agriculture. This could be years they spent working in agriculture related areas and not just professional years in agricultural education. The years of work in international agriculture refer to the time spent working on information systems, curriculum, or communications that involve the exchange of information or data

in regards to international agriculture. The last professional description is the number of years of university level experience the expert had achieved. The descriptive data was collected to ensure the panel of experts did have professional experience in the research area.

Table 2: Description of the Delphi Panel.

| ID Number | Title | University/ College | UN Region | City-Country |
|-----------|---------------------|------------------------|-----------|-------------------------|
| 1 | Professor | Texas A&M | Americas | College Station, TX USA |
| 2 | Professor | Delaware Valley | Americas | Doylestown, PA USA |
| 3 | Professor Asst. | Penn State | Americas | University Park, PA USA |
| 4 | Professor | Georgia | Americas | Athens, GA USA |
| 5 | Professor | Arizona | Americas | Tucson, AZ USA |
| 6 | Professor Assoc. | Montana State | Americas | Bozeman, MT USA |
| 7 | Professor | Florida | Americas | Gainesville, FL USA |
| 8 | Professor Assoc. | Texas Tech | Americas | Lubbock, TX USA |
| 9 | Professor | Cape Coast | Africa | Cape Coast, Ghana |
| 10 | Professor | Ohio State Botswana | Americas | Columbus, OH USA |
| 11 | Professor Assoc. | Agriculture Bunda | Africa | Sebelle, Botswana |
| 12 | Prof. | Agriculture | Africa | Zomba, Malawi |
| 13 | Professor | Washington State | Americas | Pullman, WA USA |
| 14 | Professor | Swaziland | Africa | Swaziland, Africa |
| 15 | Professor | Charles Sturt | Oceania | NSW, Australia |

Table 3: Professional Descriptive Statistics Related to the Delphi Panel.

| Condition | n | Minimum | Maximum | Mean | Median | SD |
|------------------------------------|----|---------|---------|-------|--------|-------|
| Population served by Expert | 15 | 23 | 300 | 58.13 | 44 | 68.78 |
| Years in Agriculture Profession | 15 | 16 | 52 | 24.26 | 21 | 10.12 |
| Years in International Agriculture | 15 | 6 | 23 | 12.8 | 11 | 6.61 |
| Years in University Work | 15 | 10 | 36 | 13.2 | 12 | 6.47 |

*Round I**Research Question One*

The expert panel's first question they were asked to respond to is, "What disciplines of agriculture should be included in an international agricultural education course at the university level?" The panel was encouraged to respond to this question as much as they desired. The panel responded with 93 original statements while answering this question. Each statement was examined by the researcher to locate commonalities among the responses. If commonalities were found, they were combined together into similar statements. This reduced the list of original statements to 89 statements. The responses for question one were recorded as original responses and left un-aided in developing constructs from this grouping. The researcher is examining all areas that the panel may have an interest in developing the disciplines for the international agricultural education course. These statements were then utilized in Round II.

Research Question Two

The second question that was presented to the panel for their response was, "What competencies (knowledge, skills, and abilities) in international agriculture are needed by students and should be developed in a course in international agricultural education at the

university level?” The panel responded with 113 statements. The statements were analyzed for commonalities and combined into similar statements. This resulted in 110 statements that were utilized in Round II.

Research Question Three

The third and final question the panel of experts was asked to respond to is, “How should an international agricultural education class be used in multiple degree programs at the university level?” This question provoked 27 responses by the experts. The responses were analyzed by the researcher for commonalities and similar responses were combined. This resulted in 22 original statements reported by the panel and utilized in Round II.

Round II

Introduction

The purpose for Round II was to continue the consensus process of the Delphi panel to find a consensus among the statements that were gathered in Round I. Original statements that were recorded will be classified for each question that were asked in Round I. This will enable the panel to associate the statements for each of the three research questions. The panel members were asked to rate each one of the 221 statements using the Likert-type scale (1) “strongly disagree” to (6) “strongly agree”. Individual questionnaires were examined by the researcher using Microsoft Office Excel 2003 and SPSS 12.0 software. Consensus among the panel members was set a priori and defined when two-thirds of the panel members rated a statement “agree” (5) or “strongly agree” (6). Consensus was reached when two-thirds of the panelists rated a statement as “agree” (5) or “strongly agree” (6).

Research Question One

Thirteen panelists returned the questionnaire with only 11 of the 13 completing the entire questionnaire. Reminder email messages were sent to non-respondents to encourage their participation. The researcher used the two-third response rating as a measure of consensus for the statements.

The expert panel found consensus on 12 of the 89 statements in Round II for question one, “What disciplines of agriculture should be included in an international agricultural education course at the university level? Eleven of the statements had the panelists rating them at “agree” (5) or “strongly agree” (6) to achieve consensus with 72.72-81.81% (Table 4 and Table 5). None of the statements in research question one had a 100% consensus among the panelists. Eleven of the statements reached a rating of 72.72% or higher based on the panelists rating of a “agree “(5) or “strongly agree” (6) from the 11 completed questionnaires. To achieve consensus, based on the eleven completed questionnaires, 8 of the panelists must have rated the statements with a “agree” (5) or “strongly agree” (6) rating.

Table 4: Statements in Round II Reaching Consensus with 81.81% of the Panel (n=11) Rating Either a "5" or a "6" Level of Agreement, on a Scale of 1-6*, to the Question: What disciplines of agriculture should be included in an international agricultural education course at the university level?

| Statement | Panel Mean | SD | % Agreement |
|---|---------------|------|----------------|
| Cross cultural communication | 5.18 | 0.75 | 81.81 |
| Extension education | 5.36 | 0.80 | 81.81 |
| Agricultural and extension education policies | 4.81 | 1.07 | 81.81 |

*Scale ratings: 1=Strongly Disagree, 2=Disagree, 3= Somewhat Disagree, 4= Somewhat Agree, 5= Agree, 6=Strongly Agree

Table 5: Statements in Round II Reaching Consensus with 72.72% of the Panel (n=11) Rating Either a "5" or a "6" Level of Agreement, on a Scale of 1-6*, to the Question: What disciplines of agriculture should be included in an international agricultural education course at the university level?

| Statement | Panel | | % |
|--|-------|------|-----------|
| | Mean | SD | Agreement |
| Social, economic, & political issues | 5.09 | 1.22 | 72.72 |
| Agricultural extension | 5.40 | 0.84 | 72.72 |
| Rural & community development | 5.27 | 1.10 | 72.72 |
| Role of agriculture in a developing nation's economy | 5.09 | 1.04 | 72.72 |
| Extension program planning and evaluation | 5.09 | 0.83 | 72.72 |
| Models of agricultural and extension education | 5.09 | 0.83 | 72.72 |
| Philosophies of agriculture extension | 4.81 | 1.07 | 72.72 |
| Public and private extension systems | 5.00 | 1.00 | 72.72 |
| Agriculture social systems | 4.90 | 0.70 | 72.72 |

*Scale ratings: 1=Strongly Disagree, 2=Disagree, 3= Somewhat Disagree, 4= Somewhat Agree, 5= Agree, 6=Strongly Agree

In Table 6, the data was sorted among the responses from the panel that did not have a consensus on the remaining questions. To achieve consensus, the panel must have had a percentage rating for each of the questions at 72.72 % percent or higher to be considered in consensus.

Table 6: Statements in Round II Not Reaching Consensus by the panel (n=11) on a Scale of 1-6*, to the Question: What disciplines of agriculture should be included in an international agricultural education course at the university level?

| Statement | Panel | | % |
|---|-------|------|-----------|
| | Mean | SD | Agreement |
| Plant Genetics | 3.09 | 1.04 | 0.00 |
| Agriculture biotechnology | 3.09 | 1.04 | 0.00 |
| Educational measurement and theory | 3.00 | 1.00 | 0.00 |
| Statistics | 3.72 | 1.00 | 9.09 |
| Microeconomics | 3.27 | 1.10 | 9.09 |
| Plant pathology | 3.50 | 1.50 | 18.18 |
| Animal breeding | 3.45 | 1.29 | 18.18 |
| Social psychology | 3.54 | 1.29 | 18.18 |
| Educational psychology | 3.54 | 1.43 | 18.18 |
| Administration and supervision in schools | 3.72 | 1.10 | 18.18 |
| Taxonomy of educational objectives | 3.63 | 1.20 | 18.18 |
| Agriculture engineering and technology | 3.50 | 1.43 | 18.18 |

Table 6 continued.

| | | | |
|---|------|------|-------|
| International marketing | 3.81 | 1.25 | 18.18 |
| Macroeconomics | 3.54 | 1.21 | 18.18 |
| Agricultural finance | 3.72 | 1.34 | 18.18 |
| Financial management | 3.54 | 1.21 | 18.18 |
| Structure management programs | 3.27 | 1.27 | 18.18 |
| Educational theory and practice | 3.45 | 1.12 | 18.18 |
| Educational psychology | 3.63 | 1.02 | 18.18 |
| Weed science | 3.81 | 1.40 | 27.27 |
| Agro-forestry | 3.90 | 1.37 | 27.27 |
| Non-Ruminant animal production | 3.81 | 1.53 | 27.27 |
| Meat production | 3.81 | 1.53 | 27.27 |
| Ruminant animal production | 3.90 | 1.51 | 27.27 |
| Animal Physiology | 3.22 | 1.42 | 27.27 |
| Learning theories | 4.27 | 1.10 | 27.27 |
| Philosophies of educational | 4.00 | 0.89 | 27.27 |
| Farm mechanization and technology | 3.72 | 1.48 | 27.27 |
| Food safety quality assurance | 3.63 | 1.28 | 27.27 |
| Entomology and IPM systems | 3.90 | 1.51 | 27.27 |
| Production management programs | 3.54 | 1.29 | 27.27 |
| Virology | 2.81 | 1.16 | 27.27 |
| International scientific extension dialogue | 3.72 | 1.00 | 27.27 |
| Fisheries Management | 3.72 | 1.48 | 36.36 |
| Research methods | 4.09 | 1.37 | 36.36 |
| Computing and research writing | 3.54 | 1.36 | 36.36 |
| Value chains and marketing | 3.72 | 1.67 | 36.36 |
| Methods of assessing achievement | 4.18 | 1.07 | 36.36 |
| Evaluating effectiveness of programs | 4.45 | 0.93 | 36.36 |
| Adult learning development theory | 4.27 | 1.10 | 36.36 |
| Organizational planning | 4.45 | 0.68 | 36.36 |
| Plant sciences | 4.09 | 1.70 | 45.45 |
| Poultry farming | 4.00 | 1.61 | 45.45 |
| Soil fertility management | 3.90 | 1.51 | 45.45 |
| Soil science | 4.00 | 1.61 | 45.45 |
| Guiding collaborative problem solving | 4.54 | 0.68 | 45.45 |
| Youth development and learning theory | 4.36 | 1.36 | 45.45 |
| Motivational strategies | 4.36 | 0.92 | 45.45 |
| Agronomy | 4.45 | 1.69 | 54.54 |
| Crop production | 4.27 | 1.67 | 54.54 |
| Post-Harvest management | 4.09 | 1.51 | 54.54 |
| Crop pest management | 4.27 | 1.67 | 54.54 |
| Animal science | 4.09 | 1.64 | 54.54 |
| Animal production | 4.45 | 1.69 | 54.54 |

Table 6 continued.

| | | | |
|--|------|------|-------|
| Environment management | 4.27 | 1.55 | 54.54 |
| Intercultural communication | 4.90 | 0.94 | 54.54 |
| Rural sociology | 4.54 | 1.43 | 54.54 |
| Fame management | 4.09 | 1.51 | 54.54 |
| Project planning | 4.54 | 0.82 | 54.54 |
| Curriculum development | 5.54 | 1.03 | 54.54 |
| Human resource development | 4.54 | 0.52 | 54.54 |
| Ag. leadership, theory, practice | 4.36 | 1.12 | 54.54 |
| Gender equity and issues | 4.36 | 1.20 | 54.54 |
| Cultural education | 4.54 | 0.82 | 54.54 |
| Agriculture knowledge systems | 4.45 | 1.03 | 54.54 |
| Global ethics | 4.54 | 0.82 | 54.54 |
| Entrepreneurship. | 4.54 | 1.12 | 54.54 |
| Curriculum development | 4.45 | 1.03 | 63.63 |
| Agriculture education program mgmt. | 4.72 | 1.19 | 63.63 |
| Water resource management | 4.36 | 1.56 | 63.63 |
| Land resources | 4.36 | 1.56 | 63.63 |
| Extension management and supervision | 5.20 | 0.91 | 63.63 |
| Agriculture development | 4.81 | 0.98 | 63.63 |
| Global economy | 4.81 | 0.75 | 63.63 |
| Needs assessment | 4.90 | 0.83 | 63.63 |
| Consensus building conflict resolution | 4.72 | 0.64 | 63.63 |
| Marketing | 4.09 | 1.64 | 63.63 |

*Scale ratings: 1=Strongly Disagree, 2=Disagree, 3= Somewhat Disagree, 4= Somewhat Agree, 5= Agree, 6=Strongly Agree

Seventy-seven of the original 89 statements from Research Question One in Round I did not achieve consensus in Round II. With 13 of the 15 questionnaires returned and only 11 of the questionnaires completed, eight of the eleven statements must have had to be higher than sixty-six percent to reach consensus. Ten of the non-consensus statements did achieve a 63.63% rating of (5) or (6) on the Likert-type scale. The researcher chose not to include these responses in the consensus of the panel. The previous range of two-thirds or 66 percent must have been reached. Lowering the consensus level from two-thirds 66 percent to 63 percent would lower the confidence in

the statements the panel should have excluded from the statements. Three of the statements not achieving any rating of (5) or (6) were “plant genetics” (M=3.09, SD=1.04), “agriculture biotechnology” (M=3.09, SD=1.04), and “educational measurement and theory” (M=3, SD=1).

Research Question Two

The second question that the expert panel was asked to respond to was, “What competencies (knowledge, skills, and abilities) in international agriculture are needed by students and should be developed in a course in international agricultural education at the university level? After analyzing the data, consensus was reached on 10 of the original 110 statements from Round I (Table 7-9).

Table 7: Statements in Round II Reaching Consensus with 90.0% of the Panel (n=11) Rating either a "5" or "6" Level of Agreement, on a scale of 1-6*, to the Question: What competencies (knowledge, skills, and abilities) in international agriculture are needed by students and should be developed in a course in international agricultural education at the university level?

| Statement | Panel Mean | SD | % Agreement |
|---------------------------------------|---------------|------|-------------|
| Skills at working with other cultures | 5.27 | 0.64 | 90.00 |

*Scale ratings: 1=Strongly Disagree, 2=Disagree, 3= Somewhat Disagree, 4= Somewhat Agree, 5= Agree, 6=Strongly Agree

Table 8: Statements in Round II Reaching Consensus with 81.8% of the Panel (n=11) Rating either a "5" or "6" Level of Agreement, on a scale of 1-6*, to the Question: What competencies (knowledge, skills, and abilities) in international agriculture are needed by students and should be developed in a course in international agricultural education at the university level?

| Statement | Panel Mean | SD | % Agreement |
|---|------------|------|-------------|
| Roles of change agents with clientele who possess different cultural, societal, environmental, developmental, and technological needs | 5.09 | 0.70 | 81.80 |

*Scale ratings: 1=Strongly Disagree, 2=Disagree, 3= Somewhat Disagree, 4= Somewhat Agree, 5= Agree, 6=Strongly Agree

Table 9: Statements in Round II Reaching Consensus with 72.72% of the Panel (n=11) Rating either a "5" or "6" Level of Agreement, on a scale of 1-6*, to the Question: What competencies (knowledge, skills, and abilities) in international agriculture are needed by students and should be developed in a course in international agricultural education at the university level?

| Statement | Panel Mean | SD | % Agreement |
|--|------------|------|-------------|
| Environmental and sustainable development issues | 4.81 | 0.60 | 72.70 |
| Extension models | 4.90 | 0.94 | 72.70 |
| Agriculture in environmental conservation and sustainable agricultural development | 4.90 | 0.94 | 72.70 |
| Approaches and strategies for facilitating farmer-extension-research linkages | 4.81 | 0.87 | 72.70 |
| Conservation on natural resources | 4.63 | 0.67 | 72.70 |
| An understanding on the role of non-governmental organizations (NGO) in agriculture around the world | 5.00 | 1.00 | 72.70 |
| Ability to listen, plan, evaluate, guide | 5.00 | 0.77 | 72.70 |
| Knowledge in basic agricultural sciences | 5.00 | 0.77 | 72.70 |

*Scale ratings: 1=Strongly Disagree, 2=Disagree, 3= Somewhat Disagree, 4= Somewhat Agree, 5= Agree, 6=Strongly Agree

Table 10: Statements in Round II Not Reaching Consensus with the Panel (n=11) on a Scale of 1-6*, to the Question: What competencies (knowledge, skills, and abilities) in international agriculture are needed by students and should be developed in a course in international agricultural education at the university level?

| Statement | Panel Mean | SD | % Agreement |
|---|------------|------|-------------|
| Economic competencies | 3.54 | 0.68 | 0.00 |
| Achieve economies of scale and market access issues | 3.18 | 1.16 | 0.09 |
| Applying flexible and innovative techniques in crossing traditional boundaries between secondary level and post-secondary level institutional settings whether developing formal or non-formal educational programs | 3.36 | 1.02 | 0.09 |
| International Marketing and arguing issues of fair trade | 3.54 | 1.12 | 0.09 |
| Food quality, safety assurance and certification standards | 3.18 | 1.32 | 0.09 |
| Articulation management | 3.6 | 1.07 | 0.09 |
| Role of distance education in agriculture education programs | 3.63 | 1.36 | 18.18 |
| Supervising skills in agricultural education institutions | 4.00 | 1.09 | 18.18 |
| HRD management skills | 4.00 | 0.77 | 18.18 |
| Computing | 3.63 | 1.20 | 18.18 |
| Civic Education | 3.63 | 0.92 | 18.18 |
| Computer and Technology implementation Skills | 3.63 | 1.00 | 18.18 |
| Action research | 3.81 | 1.16 | 18.18 |
| Institutional programs | 3.36 | 1.43 | 18.18 |
| Organizing and evaluating experimental methods | 4.09 | 0.94 | 27.27 |
| Preparing lesson plans and instructional materials to enhance active learning and the development of higher-level cognitive skills | 4.18 | 1.07 | 27.27 |
| Teaching students to develop the seven perceptive levels of learning | 3.72 | 1.10 | 27.27 |
| Competence development | 3.72 | 1.19 | 27.27 |
| Goal setting and rewards | 4.00 | 0.77 | 27.27 |
| Peace and conflict resolution | 4.00 | 1.09 | 27.27 |
| HIV | 4.00 | 1.48 | 27.27 |

Table 10 continued.

| | | | |
|--|------|------|-------|
| Self reliance | 3.90 | 1.44 | 27.27 |
| Administrative competencies | 3.54 | 1.21 | 27.27 |
| Identify the resources available in the context on the issue or problem to be addressed | 4.00 | 0.77 | 27.27 |
| Economic philosophy and principles on the economy in other societies | 4.00 | 1.15 | 27.27 |
| Farming systems research | 4.30 | 1.25 | 36.36 |
| Agricultural production systems | 3.90 | 1.57 | 36.36 |
| Information technology in extension systems in developing countries | 4.63 | 1.12 | 36.36 |
| Teaching theory principles and practices | 4.09 | 1.13 | 36.36 |
| Need for adaptability | 4.60 | 0.84 | 36.36 |
| Collaborative teaching and learning processes | 4.18 | 0.75 | 36.36 |
| Computer applications and use of the Internet | 4.00 | 1.00 | 36.36 |
| Leadership theory and practice, and team-building skills | 4.18 | 0.87 | 36.36 |
| Time management and priority development | 4.00 | 1.18 | 36.36 |
| Research methods | 4.09 | 1.73 | 36.36 |
| Systems skills, including evaluation and synthesis | 4.45 | 0.93 | 36.36 |
| Development of training materials in agriculture | 4.27 | 1.90 | 36.36 |
| Various Production (e.g., crop and animal) Management Skills | 3.81 | 1.32 | 36.36 |
| Strategies for Distance Delivery | 3.72 | 1.42 | 36.36 |
| Appropriate methodology in identifying local and regional needs | 4.63 | 0.92 | 36.36 |
| Apply the basic principles of effective teaching and learning | 4.45 | 1.21 | 36.36 |
| Understand the concept of the self directed learner as a basis for working with adults in either formal or non-formal settings | 4.00 | 1.00 | 36.36 |
| Global dimensions (internationalization) of agriculture roles and management of rural youth programs | 4.36 | 0.67 | 45.45 |

Table 10 continued.

| | | | |
|---|------|------|-------|
| Managing and conserving rural life/communities | 4.36 | 0.67 | 45.45 |
| Strategies for stakeholder participation in extension planning | 4.45 | 1.03 | 45.45 |
| Social consciousness | 4.36 | 0.92 | 45.45 |
| Agricultural development | 4.54 | 1.12 | 45.45 |
| Integrated community economic development | 4.36 | 0.67 | 45.45 |
| Strategies to acquire knowledge, skill, understanding among selected knowledge bases | 4.27 | 0.78 | 45.45 |
| Teaching and advising on the basis of individual needs, skills, abilities, and age groups | 4.27 | 1.10 | 45.45 |
| Teaching on the basis of group and individual planning, thinking, and evaluation processes | 4.27 | 0.90 | 45.45 |
| Teaching on the basis of institutional, community, regional, national or international contexts and resources | 4.45 | 0.82 | 45.45 |
| Methods of teaching practical or psychomotor skills to rural young people | 4.00 | 1.34 | 45.45 |
| Vocational and technical education necessary to achieve long-term agricultural development | 4.36 | 1.20 | 45.45 |
| Report writing | 4.54 | 0.82 | 45.45 |
| Higher order thinking skills, including evaluation and synthesis | 4.18 | 1.16 | 45.45 |
| Technical competencies | 4.00 | 1.34 | 45.45 |
| Agriculture subject matter | 4.45 | 1.29 | 45.45 |
| Human relations competencies | 4.36 | 1.20 | 45.45 |
| Curriculum development | 4.36 | 0.92 | 45.45 |
| Personal and professional aspects of working in different socio-cultural contexts and in an international environment | 4.63 | 0.92 | 45.45 |
| Team approach to enhance the learning experience | 4.27 | 0.78 | 45.45 |
| Farmer field school | 4.45 | 0.82 | 45.45 |

Table 10 continued.

| | | | |
|--|------|------|-------|
| Basics of the political system and the organization of government in other societies | 4.36 | 0.92 | 45.45 |
| Apply the principles of consensus building and conflict resolution | 4.27 | 1.00 | 45.45 |
| Problem solving approach in knowledge dissemination | 4.36 | 0.92 | 45.45 |
| Understand and value the culture and context of others | 4.81 | 0.98 | 45.45 |
| Develop effective community demonstrations utilizing community involvement | 4.45 | 1.03 | 45.45 |
| Communication Knowledge | 4.80 | 1.07 | 54.54 |
| Roles of extension in disseminating technical, marketing, management, and policy information to farmers | 4.72 | 0.78 | 54.54 |
| A systems perspective of agriculture | 4.90 | 0.94 | 54.54 |
| Adult education methods and strategies | 4.45 | 0.93 | 54.54 |
| Youth leadership development | 4.36 | 1.12 | 54.54 |
| Gender in agriculture, genders issues in international agriculture | 4.45 | 0.93 | 54.54 |
| Communication competencies | 4.36 | 1.36 | 54.54 |
| Program planning | 4.54 | 0.82 | 54.54 |
| Extension Communication | 4.36 | 1.20 | 54.54 |
| Know how to implement their knowledge base by being creative in using indigenous knowledge, skills and resources | 4.72 | 1.00 | 54.54 |
| Cross cultural communication | 4.63 | 1.20 | 54.54 |
| participatory research | 4.63 | 0.92 | 54.54 |
| Current world situation | 4.90 | 0.94 | 54.54 |
| World international development agencies | 4.90 | 0.94 | 54.54 |
| Religious practices in other societies | 4.36 | 1.12 | 54.54 |
| Community leadership organization | 4.63 | 0.8 | 63.63 |
| Extension models in reducing rural poverty | 4.90 | 0.83 | 63.63 |
| Engaging people in successful problem solving activities | 4.72 | 0.64 | 63.63 |
| Methods to transfer skills to peers and students | 4.63 | 0.80 | 63.63 |

Table 10 continued.

| | | | |
|--|------|------|-------|
| Teaching skills in individual, team teaching, face to face classroom, and at distance settings | 4.63 | 1.12 | 63.63 |
| People orientation when working as an agricultural/extension educator | 5.00 | 1.00 | 63.63 |
| Leadership and administration in agricultural and extension education | 4.63 | 1.28 | 63.63 |
| To acquaint students with the interaction among available resources, existing technology and science, farmers, culture and context, and the role educational channels play in the adoption of innovations (technology and science) to produce more quantity or high quality or high quality food and fiber | 3.90 | 1.70 | 63.63 |
| Program management | 4.81 | 0.75 | 63.63 |
| Knowledge of agricultural systems from around the world | 4.72 | 0.64 | 63.63 |
| An understanding of agricultural systems and extension education programs in other countries | 4.90 | 0.81 | 63.63 |
| An understanding of governmental agencies (departments of agriculture, ministries of agriculture) in other countries | 4.80 | 0.91 | 63.63 |
| How indigenous culture and traditions influence agricultural production practices | 4.81 | 0.98 | 63.63 |
| Internationalizing agriculture education | 5.09 | 0.94 | 63.63 |
| Extension education | 5.20 | 0.91 | 63.63 |
| Future trends in international development | 4.90 | 0.83 | 63.63 |
| Program development process including needs assessment, program planning, program implementation and stakeholder evaluation | 5.00 | 0.89 | 63.63 |
| Principles of the adoption diffusion process | 4.72 | 0.90 | 63.63 |
| Appreciate the concept of the "Ugly American" and its relation to building trust, credibility and human capacity | 5.00 | 1.09 | 63.63 |

Table 10 continued.

| | | | |
|---|------|------|-------|
| Use effective communication and leadership principles | 4.72 | 0.90 | 63.63 |
|---|------|------|-------|

*Scale ratings: 1=Strongly Disagree, 2=Disagree, 3= Somewhat Disagree, 4= Somewhat Agree, 5= Agree, 6=Strongly Agree

Research Question Three

The third question that the expert panel was asked to respond to was, “How should an international agricultural education class be used in multiple degree programs at the university level? After analyzing the data, consensus was reached on 1 of the original 20 statements from Round I (Table 11).

Table 11: Statements in Round II Reaching Consensus with 72.72% of the Panel (n=11) Rating Either a "5" or a "6" Level of Agreement, on a Scale of 1-6*, to the Question: How should an international agricultural education class be used in multiple degree programs at the university level?

| Statement | Panel Mean | SD | % Agreement |
|--|------------|------|-------------|
| A requirement for a minor in international agriculture | 4.81 | 1.47 | 72.72 |

*Scale ratings: 1=Strongly Disagree, 2=Disagree, 3= Somewhat Disagree, 4= Somewhat Agree, 5= Agree, 6=Strongly Agree

Table 12: Statements in Round II Not Reaching Consensus with the Panel (n=11) on a Scale of 1-6*, to the Question: How should an international agricultural education class be used in multiple degree programs at the university level?

| Statement | Panel Mean | SD | % Agreement |
|--|------------|------|-------------|
| Evolve advocacy and lobbying strategies for fair trade in the world | 2.63 | 1.50 | 0.09 |
| Each group should focus on the degree program for which it has registered | 3.54 | 1.96 | 27.27 |
| Discuss various food policies and their implications for development and peace | 3.81 | 1.16 | 27.27 |

Table 12 continued.

| | | | |
|--|------|------|-------|
| To acquaint students with the interaction among available resources, existing technology and science, farmers, culture and context, and the role educational channels play in the adoption of innovations (technology and science) to produce more quantity of high quality food and fiber | 4.20 | 1.47 | 36.36 |
| A single introductory subject of double subject, available to students in undergraduate (final year), graduate, master's and PhD programs. Can be followed up with real-life 'case study' subjects involving individual or group activities | 4.18 | 1.25 | 36.36 |
| Share ideas and experiences | 3.90 | 1.64 | 36.36 |
| Required | 4.00 | 1.54 | 36.36 |
| The "class" must be part of a "program" not a stand-alone class | 3.36 | 1.96 | 36.36 |
| Debate current and emerging issues in agriculture and how these impact on other sectors of the economy | 4.36 | 1.12 | 36.36 |
| Required in AgEd | 4.45 | 1.12 | 45.45 |
| The course can be viewed as having an international orientation with the broad definition of agricultural education which encompasses all agricultural discipline areas | 4.81 | 1.07 | 54.54 |
| Develop a series of appropriate courses that would lead to a minor in International Agricultural Education | 4.54 | 1.57 | 54.54 |
| An elective for students in colleges of agriculture | 4.63 | 1.50 | 54.54 |
| Serve as an elective or fulfill the multicultural requirement many universities have | 4.36 | 1.28 | 54.54 |
| The class should be an option in most undergraduate and graduate programs | 4.36 | 1.12 | 54.54 |
| As an area of specialization, a minor, or a major area of study | 5.00 | 1.18 | 54.54 |

Table 12 continued.

| | | | |
|--|------|------|-------|
| As an instrument of change in the global village. This means, change in skills, knowledge and attitudes of the learners, who will in turn influence change in agricultural production technologies in their communities or countries | 4.72 | 0.90 | 63.63 |
| It should be a cross discipline course for all students in Colleges of Agriculture | 4.45 | 1.29 | 63.63 |
| A degree requirement for students in selected areas | 4.45 | 1.43 | 63.63 |

*Scale ratings: 1=Strongly Disagree, 2=Disagree, 3= Somewhat Disagree, 4= Somewhat Agree, 5= Agree, 6=Strongly Agree

Round III

Introduction

The purpose of Round III was for the panel members to have the opportunity to re-evaluate the items they did not select in Round II. This was an effort to allow the panel to reconsider any of the statements that they believed should have been included in the questionnaire that did not reach consensus in Round II. In Round III, the participants were shown only the questions that were not selected in Round II. The panel members were asked to select the statements that they would like to reconsider for inclusion for each of the three questions. Individual questionnaires were examined by the researcher using Microsoft Office Excel 2003 and SPSS 12.0 software. The panel members that returned completed questionnaires totaled 12 out of 15. The panel (n=12) was the responding population for Round III. Consensus among the panel members was set a priori and defined when two-thirds of the panel members selected a statement for reconsideration. Consensus was reached when 8 of the 12 panelists (66.66%) selected a statement for reconsideration. None of the statements that were submitted to the panel for

reconsideration for inclusion of the three research questions were selected. The panel had achieved a consensus at the conclusion of Round II. Table 13 displays the statements that were given to the panel for reconsideration with their responses.

Research Question One

The first question that was returned to the panel for their reconsideration was, “What disciplines of agriculture should be included in an international agricultural education course at the university level?” 12 of the 15 panelists returned their reconsideration questionnaires for Round III. None of the statements reached consensus by the panel. The panel would have had to come to a consensus with two-thirds of the panel agreeing on a particular statement. Non-consensus statements are in Table 13.

Table 13: Statements in Round III Not Reaching Reconsideration for Consensus with the Panel (n=12) to the Question: What disciplines of agriculture should be included in an international agricultural education course at the university level?

| Statement | No. of Panelists Seeking Reconsideration | % Panelists Seeking Reconsideration |
|---------------------------------------|--|-------------------------------------|
| Agriculture biotechnology | 0.00 | 0.00 |
| Meat Production | 0.00 | 0.00 |
| Agricultural finance | 0.00 | 0.00 |
| Structure management programs | 0.00 | 0.00 |
| Meat production | 0.00 | 0.00 |
| Organizational planning | 0.00 | 0.00 |
| Guiding collaborative problem solving | 0.00 | 0.00 |
| Project planning | 0.00 | 0.00 |
| Educational psychology | 1.00 | 8.33 |
| International marketing | 1.00 | 8.33 |
| Financial management | 1.00 | 8.33 |
| Educational psychology | 1.00 | 8.33 |
| Ruminant animal production | 1.00 | 8.33 |
| Poultry farming | 1.00 | 8.33 |
| Crop production | 1.00 | 8.33 |

Table 13 continued.

| | | |
|---|------|-------|
| Post-Harvest management | 1.00 | 8.33 |
| Agriculture knowledge systems | 1.00 | 8.33 |
| Entrepreneurship. | 1.00 | 8.33 |
| Ag. education program management | 2.00 | 16.66 |
| Educational measurement and theory | 2.00 | 16.66 |
| Statistics | 2.00 | 16.66 |
| Microeconomics | 2.00 | 16.66 |
| Animal Science | 2.00 | 16.66 |
| Weed science | 2.00 | 16.66 |
| Animal Physiology | 2.00 | 16.66 |
| Entomology and IPM systems | 2.00 | 16.66 |
| Methods of assessing achievement | 2.00 | 16.66 |
| Plant sciences | 2.00 | 16.66 |
| Soil fertility management | 2.00 | 16.66 |
| Soil science | 2.00 | 16.66 |
| Crop pest management | 2.00 | 16.66 |
| Farm management | 2.00 | 16.66 |
| Cultural education | 2.00 | 16.66 |
| Agriculture education program mgmt. | 2.00 | 16.66 |
| Water resource management | 2.00 | 16.66 |
| Land resources | 2.00 | 16.66 |
| Marketing | 2.00 | 16.66 |
| Agronomy | 3.00 | 25.00 |
| Educational theory and practice | 3.00 | 25.00 |
| Plant pathology | 3.00 | 25.00 |
| Agro-forestry | 3.00 | 25.00 |
| Production management programs | 3.00 | 25.00 |
| Adult learning development theory | 3.00 | 25.00 |
| Animal production | 3.00 | 25.00 |
| Environment management | 3.00 | 25.00 |
| Curriculum development | 3.00 | 25.00 |
| Ag. leadership, theory, practice | 3.00 | 25.00 |
| Global ethics | 3.00 | 25.00 |
| Extension management and supervision | 3.00 | 25.00 |
| Animal breeding | 4.00 | 33.33 |
| Social psychology | 4.00 | 33.33 |
| Administration and supervision in schools | 4.00 | 33.33 |
| Taxonomy of educational objectives | 4.00 | 33.33 |

Table 13 continued.

| | | |
|---|------|-------|
| Social psychology | 4.00 | 33.33 |
| Non-Ruminant animal production | 4.00 | 33.33 |
| Learning theories | 4.00 | 33.33 |
| Philosophies of education and objectives | 4.00 | 33.33 |
| Farm mechanization and technology | 4.00 | 33.33 |
| Food safety quality assurance | 4.00 | 33.33 |
| Virology | 4.00 | 33.33 |
| Fisheries Management | 4.00 | 33.33 |
| Value chains and marketing | 4.00 | 33.33 |
| Motivational strategies | 4.00 | 33.33 |
| Philosophies of ed. & applications | 4.00 | 33.33 |
| Rural sociology | 4.00 | 33.33 |
| Consensus building conflict resolution | 4.00 | 33.33 |
| Agriculture engineering and technology | 5.00 | 41.66 |
| Macroeconomics | 5.00 | 41.66 |
| Computing and research writing | 5.00 | 41.66 |
| Human resource development | 5.00 | 41.66 |
| International scientific extension dialogue | 6.00 | 50.00 |
| Evaluating effectiveness of programs | 6.00 | 50.00 |
| Youth development and learning theory | 6.00 | 50.00 |
| Extension education | 6.00 | 50.00 |
| Gender equity and issues | 6.00 | 50.00 |
| Research methods | 7.00 | 58.33 |

Research Question Two

The second question that was submitted to the panel for their reconsideration was, “What competencies (knowledge, skills, and abilities) in international agriculture are needed by students and should be developed in a course in international agricultural education at the university level?” 12 of the 15 panelists returned their reconsideration questionnaires for Round III. Table 14 displays the statements that did not reach consensus by the panelists for question two Round III.

Table 14: Statements in Round III Not Reaching Reconsideration for Consensus with the Panel (n=12) to the Question: What competencies (knowledge, skills, and abilities) in international agriculture are needed by students and should be developed in a course in international agricultural education at the university level?

| Statement | No. of Panelists Seeking Reconsideration | % Panelists Seeking Reconsideration |
|---|--|-------------------------------------|
| Economic competencies | 0.00 | 0.00 |
| Achieve economies of scale and market access issues | 0.00 | 0.00 |
| Articulation management | 0.00 | 0.00 |
| Institutional programs | 0.00 | 0.00 |
| Competence development | 0.00 | 0.00 |
| Goal setting and rewards | 0.00 | 0.00 |
| Need for adaptability | 0.00 | 0.00 |
| Time management and priority development | 0.00 | 0.00 |
| Strategies for Distance Delivery | 0.00 | 0.00 |
| Appropriate methodology in identifying local and regional needs | 0.00 | 0.00 |
| Strategies to acquire knowledge, skill, understanding among selected knowledge bases | 0.00 | 0.00 |
| Personal and professional aspects of working in different socio-cultural contexts and in an international environment | 0.00 | 0.00 |
| Team approach to enhance the learning experience | 0.00 | 0.00 |
| Problem solving approach in knowledge dissemination | 0.00 | 0.00 |
| Methods to transfer skills to peers and students | 0.00 | 0.00 |
| Food quality, safety assurance and certification standards | 0.00 | 0.00 |
| Economic philosophy and principles on the economy in other societies | 0.00 | 0.00 |
| HRD management skills | 1.00 | 8.33 |
| Computing | 1.00 | 8.33 |
| Self reliance | 1.00 | 8.33 |

Table 14 continued.

| | | |
|--|------|------|
| Identify the resources available in the context on the issue or problem to be addressed | 1.00 | 8.33 |
| Collaborative teaching and learning processes | 1.00 | 8.33 |
| Systems skills, including evaluation and synthesis | 1.00 | 8.33 |
| Apply the basic principles of effective teaching and learning | 1.00 | 8.33 |
| Social consciousness | 1.00 | 8.33 |
| Integrated community economic development | 1.00 | 8.33 |
| Report writing | 1.00 | 8.33 |
| Technical competencies | 1.00 | 8.33 |
| Apply the principles of consensus building and conflict resolution | 1.00 | 8.33 |
| Develop effective community demonstrations utilizing community involvement | 1.00 | 8.33 |
| A systems perspective of agriculture | 1.00 | 8.33 |
| Engaging people in successful problem solving activities | 1.00 | 8.33 |
| Teaching skills in individual, team teaching, face to face classroom, and at distance settings | 1.00 | 8.33 |
| To acquaint students with the interaction among available resources, existing technology and science, farmers, culture and context, and the role educational channels play in the adoption of innovations (technology and science) to produce more quantity or high quality or high quality food and fiber | 1.00 | 8.33 |
| How indigenous culture and traditions influence agricultural production practices | 1.00 | 8.33 |
| Principles of the adoption diffusion process | 1.00 | 8.33 |

Table 14 continued.

| | | |
|--|------|-------|
| Teaching students to develop the seven perceptive levels of learning | 1.00 | 8.33 |
| Various Production (e.g., crop and animal) Management Skills | 1.00 | 8.33 |
| Understand the concept of the self directed learner as a basis for working with adults in either formal or non-formal settings | 1.00 | 8.33 |
| Religious practices in other societies | 1.00 | 8.33 |
| Curriculum development | 2.00 | 16.66 |
| Applying flexible and innovative techniques in crossing traditional boundaries between secondary level and post-secondary level institutional settings whether developing formal or non-formal educational programs | 2.00 | 16.66 |
| International Marketing and arguing issues of fair trade | 2.00 | 16.66 |
| Supervising skills in agricultural education institutions | 2.00 | 16.66 |
| Preparing lesson plans and instructional materials to enhance active learning and the development of higher-level cognitive skills | 2.00 | 16.66 |
| Farming systems research | 2.00 | 16.66 |
| Managing and conserving rural life/communities | 2.00 | 16.66 |
| Strategies for stakeholder participation in extension planning | 2.00 | 16.66 |
| Cross cultural communication | 2.00 | 16.66 |
| Current world situation | 2.00 | 16.66 |
| World international development agencies | 2.00 | 16.66 |
| Farming systems research | 2.00 | 16.66 |
| Teaching theory principles & Practices | 2.00 | 16.66 |
| Curriculum Development | 2.00 | 16.66 |
| Systems perspective of agriculture | 2.00 | 16.66 |
| Role of distance education in agriculture education programs | 2.00 | 16.66 |

Table 14 continued.

| | | |
|---|------|-------|
| Computer and Technology implementation Skills | 2.00 | 16.66 |
| Action research | 2.00 | 16.66 |
| Organizing and evaluating experimental methods | 2.00 | 16.66 |
| Administrative competencies | 2.00 | 16.66 |
| Agricultural production systems | 2.00 | 16.66 |
| Information technology in extension systems in developing countries | 2.00 | 16.66 |
| Computer applications and use of the Internet | 2.00 | 16.66 |
| Leadership theory and practice, and team-building skills | 2.00 | 16.66 |
| Teaching and advising on the basis of individual needs, skills, abilities, and age groups | 2.00 | 16.66 |
| Teaching on the basis of group and individual planning, thinking, and evaluation processes | 2.00 | 16.66 |
| Teaching on the basis of institutional, community, regional, national or international contexts and resources | 2.00 | 16.66 |
| Methods of teaching practical or psychomotor skills to rural young people | 2.00 | 16.66 |
| Vocational and technical education necessary to achieve long-term agricultural development | 2.00 | 16.66 |
| Agriculture subject matter | 2.00 | 16.66 |
| Human relations competencies | 2.00 | 16.66 |
| Farmer field school | 2.00 | 16.66 |
| Basics of the political system and the organization of government in other societies | 2.00 | 16.66 |
| Understand and value the culture and context of others | 2.00 | 16.66 |
| Youth leadership development | 2.00 | 16.66 |

Table 14 continued.

| | | |
|---|------|-------|
| Communication competencies | 2.00 | 16.66 |
| Know how to implement their knowledge base by being creative in using indigenous knowledge, skills and resources | 2.00 | 16.66 |
| Leadership and administration in agricultural and extension education | 2.00 | 16.66 |
| Knowledge of agricultural systems from around the world | 2.00 | 16.66 |
| An understanding of governmental agencies (departments of agriculture, ministries of agriculture) in other countries | 2.00 | 16.66 |
| Program development process including needs assessment, program planning, program implementation and stakeholder evaluation | 2.00 | 16.66 |
| Teaching theory principles and practices | 2.00 | 16.66 |
| Civic Education | 3.00 | 25.00 |
| HIV | 3.00 | 25.00 |
| Research methods | 3.00 | 25.00 |
| Global dimensions (internationalization) of agriculture roles and management of rural youth programs | 3.00 | 25.00 |
| Communication Knowledge | 3.00 | 25.00 |
| Gender in agriculture, genders issues in international agriculture | 3.00 | 25.00 |
| Program planning | 3.00 | 25.00 |
| People orientation when working as an agricultural/extension educator | 3.00 | 25.00 |
| Internationalizing agriculture education | 3.00 | 25.00 |
| future trends in international development | 3.00 | 25.00 |
| Use effective communication and leadership principles | 3.00 | 25.00 |
| Participatory research | 3.00 | 25.00 |
| Peace and conflict resolution | 4.00 | 33.33 |
| Agricultural development | 4.00 | 33.33 |
| Higher order thinking skills, including evaluation and synthesis | 4.00 | 33.33 |

Table 14 continued.

| | | |
|--|------|-------|
| Roles of extension in disseminating technical, marketing, management, and policy information to farmers | 4.00 | 33.33 |
| Extension Communication | 4.00 | 33.33 |
| Community leadership organization | 4.00 | 33.33 |
| Program management | 4.00 | 33.33 |
| An understanding of agricultural systems and extension education programs in other countries | 4.00 | 33.33 |
| Extension education | 4.00 | 33.33 |
| Appreciate the concept of the "Ugly American" and its relation to building trust, credibility and human capacity | 4.00 | 33.33 |
| Adult education methods and strategies | 5.00 | 41.66 |
| Extension models in reducing rural poverty | 5.00 | 41.66 |
| Development of training materials in agriculture | 6.00 | 50.00 |

Research Question Three

The third question that was asked of the panel was, “How should an international agricultural education class be used in multiple degree programs at the university level?”

12 of the 15 panelists returned their reconsideration questionnaires for Round III. Table 4.15 lists the statements that did not reach consensus for question three in Round III.

Table 15: Statements in Round III Not Reaching Reconsideration for Consensus with the Panel (n=12) to the Question: How should an international agricultural education class be used in multiple degree programs at the university level?

| Statement | No. of Panelists Seeking Reconsideration | % Panelists Seeking Reconsideration |
|---|--|---|
| Evolve advocacy and lobbying strategies for fair trade in the world | 0.00 | 0.00 |
| Discuss various food policies and their implications for development and peace | 0.00 | 0.00 |
| Required | 0.00 | 0.00 |
| Required in Ag. Ed. | 0.00 | 0.00 |
| Each group should focus on the degree program for which it has registered | 1.00 | 8.33 |
| Share ideas and experiences | 1.00 | 8.33 |
| The "class" must be part of a "program" not a stand-alone class | 1.00 | 8.33 |
| The course can be viewed as having an international orientation with the broad definition of agricultural education which encompasses all agricultural discipline areas | 1.00 | 8.33 |
| Serve as an elective or fulfill the multicultural requirement many universities have | 1.00 | 8.33 |
| As an area of specialization, a minor, or a major area of study | 1.00 | 8.33 |
| As an instrument of change in the global village. This means, change in skills, knowledge and attitudes of the learners, who will in turn influence change in agricultural production technologies in their communities or countries | 1.00 | 8.33 |
| A single introductory subject of double subject, available to students in undergraduate (final year), graduate, master's and PhD programs. Can be followed up with real-life 'case study' subjects involving individual or group activities | 2.00 | 16.66 |
| An elective for students in colleges of agriculture | 2.00 | 16.66 |

Table 15 continued.

| | | |
|--|------|-------|
| The class should be an option in most undergraduate and graduate programs | 2.00 | 16.66 |
| A degree requirement for students in selected areas | 2.00 | 16.66 |
| To acquaint students with the interaction among available resources, existing technology and science, farmers, culture and context, and the role educational channels play in the adoption of innovations (technology and science) to produce more quantity of high quality food and fiber | 3.00 | 25.00 |
| Debate current and emerging issues in agriculture and how these impact on other sectors of the economy | 3.00 | 25.00 |
| It should be a cross discipline course for all students in Colleges of Agriculture | 3.00 | 25.00 |
| Develop a series of appropriate courses that would lead to a minor in International Agricultural Education | 4.00 | 33.33 |

Chapter V

Conclusions, Implications, and Recommendations

This section gives a summary of the research conducted, conclusions and implications from the research and recommendations for further study on this contextual area.

Conclusions

The purpose of this research was to identify the type and contextual applications for an international agricultural education class at the university level. This class would need to have specific disciplines identified, competencies addressed, and how the class would be used in a multiple degree program at the university level. In order to accomplish this task, university professionals were asked to participate in survey research that involves the following research questions:

1. What disciplines of agriculture should be included in an international agricultural education course at the university level?
2. What competencies (knowledge, skills, and abilities) in international agriculture are needed by students and should be developed in a course in international agricultural education at the university level?
3. How should an international agricultural education class be used in multiple degree programs at the university level?

The conclusion of the data collected is a result of the responses gathered from the panelists in the survey research. The limitations that were identified in chapter one was evident upon the conclusion of the survey research. The limitations are:

1. The method of collecting data used was email surveys. The accuracy of the responses was attributed to the individual's readiness to participate in the study, the thoroughness of answering the questions on the survey, and allowing the appropriate amount of time to complete each question.
2. Data that was collected at the deadline for each round was analyzed.
3. The study was limited to individuals that had experience in international agriculture education that were chosen based on their expertise in this field such as: faculty members of agriculture education who teach undergraduate and graduate level of study within a major university or were respected professionals within the international agricultural education community.
4. The expert panel used for the Delphi study was asked to respond to competencies achieved by students in taking an international agricultural education course, the disciplines of agriculture that should be included in such a course, and the use of such a course in a multiple degree program. The results of the survey were dependent on the interpretation of the researcher which led to the final outcomes and conclusions of this study.
5. The generalization of the results from this study will not reflect all areas of the globe that fall under international agricultural education.
6. The disciplines, competencies, and uses of the international agricultural education class will only be represented by the survey panelists taking part in the research survey.

In Round I, the statements that were gathered addressed a wide array of areas for each of the three research questions. The vast number of responses indicates the many ideas and opinions that the panel has in this particular area. Once the primary statements

had been identified, Round II yielded the first statements gaining consensus. The statements submitted in Round III for re-consideration were not selected and consensus was reached after Round II was completed.

In Table 4.4 in response to research question one, cross cultural communication, extension education, and agricultural and extension education policies received an agreement percentage of 81.81%. The agreement of these three statements leads the researcher to believe that the panelists have a valued interest in communication and extension practices. Cross cultural communication would involve communication among varied boundaries of individuals within an international setting. Having the ability to understand one another through a common channel of communication would be key in developing relationships among stakeholders in that environment. Agricultural education and extension would provide the contextual applications necessary to deliver a course and the mode of development of the course through the extension learning process. Information delivery systems that have been developed through education and extension would be key components in gaining accessibility and acceptance of terms and conditions in an international environment. These disciplines could bring in a wide variety of topic areas to the class and give the instructor plenty of freedom to discuss each of the disciplines with different interest approaches and strategies.

The cultural communication discipline may involve the use of different language systems, monetary systems, or even trading systems among communities. The agricultural education and extension disciplines may involve food and fiber processing as well as techniques for production and marketing in international agronomic regions.

In Table 4.5, there were nine areas that received a 72.72% agreement for disciplines that should be included in an international agricultural education course.

It provides insight into the responses that may come available when the panel begins to respond to research question two. Some of these areas included; social, economic, and political issues, community development, extension models and development, and agriculture social systems. This list of disciplines is strongly garnished with extension items. The panel must have felt that by deciding to include as many extension areas in selecting disciplines, that these would be of more value to the students when trying to understand the components of agriculture systems in foreign territories.

Specific disciplines not making the cut from the panel can be found in table 4.6. Some of the items not selected were areas that dealt primarily with production practices, technical skills, trade skills, and management skills from many subjects within agriculture. The rating for these areas ranged from 0.00 to 63.63% agreement. Three of the statements received a panel agreement of 0.00%. The discipline of plant genetics, biotechnology, and educational measurement and theory were not selected. None of these statements reached the two-thirds consensus needed to be selected for Round II. From the non-selection of these areas, the panel did not choose to accept a specific discipline for the course, but chose to select the areas with broader scopes. No other disciplines were accepted in Round III.

In Table 4.7 in response to research question two, an agreement of 90.0% among the panelists was secured when identifying the knowledge, skills, and abilities for the course in relation to skills at working with other cultures. A necessity for dealing with any culture, foreign or domestic, is a skill that leads students to assess and evaluate a

culture and begin working within the constructs of that culture. Some of these skills would have to be identified so the instructor would have time to implement them into the curriculum. The developed skills could be communication, cultural enrichment or awareness, or even technological differences that may need to be overcome. This aligns itself to the second highest rated statement for research question two in Table 4.8. The panel responded with an 81.80% level of agreement on roles of change agents with clientele who possess different cultural, societal, environmental, developmental, and technological needs. This suggests that adoption rates for cross cultural components is deemed important for the students to understand from each differing culture. Items in Table 4.9 reaching a 72.72% agreement among the panelists included; environmental, sustainable, developmental issues, extension models, farmer-extension-research linkages, conservation, understanding the roles of non-governmental organizations, knowledge in basic agriscience, and ability to listen, plan, evaluate, and guide. These competencies also associate themselves closely to the extension field. The selection from this lower agreement group still does not focus on production or technical trade skills, but on abstract skills and abilities that focus on concepts and understandings of particular subject areas.

In Table 4.11, there was only one statement that the panel agreed upon for consensus for the question dealing with the use of the international agricultural education class in a multiple degree program. The panel had a 72.72% agreement rating that the course should be a requirement for students with a minor in international agriculture. None of the other responses were close in agreement. This question was the most definitive of all of the research questions.

From the data that has gathered, it is evident that the responses have been focused around extension and education. Almost one-third of the course would include topics that involve extension. This type of information confers that the areas that the panel feels confident in recommending is in extension education. Also, with the absence of the production, technical and practical skill areas, the researcher can assume that focusing on specific production practices are not one of the primary areas of importance for the group. One might have also suggested that there may be more communication, economics, trade issues, and political areas include in the panel response.

Implications

Research Question One

The implications for research question one, “What disciplines of agriculture should be included in an international agricultural education course at the university level?” come in many forms. The statements gathered from the panelists in the first round included areas such as extension, education, production practices, economics, etc. All the responses can be found in Appendix F. The noticeable disciplines that did not make the list are the ones that might be assumed to make the list. The regular production disciplines and modern agriculture disciplines were not selected. Disciplines such as animal science, beef production, crop management, and production management were excluded. The lack of these types of disciplines being chosen leads the researcher to believe the panel wanted to focus more on extension and education and less on practical skills, production, and technology. The panel may have chosen those disciplines so that the instructor for the class or the course development team would have a broad area to choose from in constructing the course curriculum. The focus may have been to give the

course a general direction but may have left the specific details and finite direction up to the university and the instructor.

Research Question Two

The knowledge, skills and abilities chosen by the panel to include in the international agricultural education course were: skills at working with other cultures, roles of change agents with clientele who possess different cultural, societal, environmental, developmental, and technological needs, environmental, sustainable, developmental issues, extension models, farmer-extension-research linkages, conservation, understanding the roles of non-governmental organizations, knowledge in basic agriscience, and ability to listen, plan, evaluate, and guide. Even though these skills are needed in most any facet of agriculture development, the role of the student to understand the production and technical skills or even the practical skills to evaluate a culture based on its agronomic development are not selected. There might also not be an immediate concern for the course to offer such definitive skills such as field and cropping practices as there is such a variance in crop production around the globe. The panel may have wanted to focus on the skills that could be transgressed from one global site to another without focusing on a single production or technical skill and trade that could be local to that specific region.

Research Question Three

The panel only chose one requirement for the international agricultural education course to be used in a multiple degree program. The statement they selected was for the course to be a requirement for students that plan to have a minor in international agricultural education. Post-secondary institutions that have schools or colleges within

the university would be able to expose students to the course within their college or school. The school of Agriculture could offer an international agricultural education course to students that have a minor in international agricultural education. This would allow the students to gain a more direct insight into the agriculture systems around the globe.

The panelists in the study may have had more experience in extension and less experience with technical and production areas. The country of origin of the panelists may have had a role in the selection of the 23 statements discovered in the study. If the panelists were raised in an environment where production practices were common but a lack of extension and education issues was prevalent, then the consensus reached for research questions one and two could be rationalized. Also, if the panelists were not native to the country and population in which they are serving, it is possible that the responses were based on the prevalent observations from their own experiences. The panelists may also have been trained in a different country than the one in which they are serving. This could influence the panelists responses based on their type and condition of their training.

The sample size for this study may have had an impact on the type of responses that were selected for consensus. With such a small group of experts to rely on for response, the limited number of participants may have funneled the consensus statements into areas in which the panel all had more expertise. A large group may have had more input on providing additional areas on the disciplines, knowledge, skills, and abilities and uses for such a course.

The responses that were selected by the panel demonstrates that approximately one-third of the course is going to be built around extension. Some of the areas of extension include processing, philosophies, methods, and models in international agricultural education.

Recommendations

The following recommendations were made based on the findings and conclusions of this study.

Additional studies should be conducted to obtain the current trends in agricultural education in relation to the course competencies so they would reflect an up to date student competency list for the class. Using outdated competencies would not reflect the current global situation for the class. In a fast changing global marketplace, current issues would need to be addressed to benefit all stakeholders.

There would also be a need for future studies of the need for a university level international agriculture education class used to reflect current trends in post-secondary curriculum. Curriculum trends in a global agricultural education course should reflect the needs of the university as well as the needs of the students. A sound curriculum based on current teaching methods and delivery systems will encourage participation and interest in the course. At the moment, distance education and video conferencing classes could be used to deliver class material to students from multiple campuses within the same university system. Space allocation for the class could be reduced if an off site delivery method was used.

A study should be conducted concerning the level of agreement of the various areas of international agriculture education among the expert panel members to identify

changes in the perceived needs for the class. Even though the panelist for this survey were considered experts in their field, it does not imply that future areas of interest could be developed to support emerging areas of international agricultural education. What may be on the forefront of discovery and analysis today may be outdated in just a few short years.

An independent analysis survey should be conducted to understand the delivery strategies for such a course and the value of a course to the university and the students enrolled. If multiple delivery methods could be established to the students, then the availability of the class becomes more appealing. The ability of post-secondary students to enroll and participate in the class from many locations instead of just one area on campus might be more appealing. This might involve more students than the ones slated as a requirement for a minor in international agricultural education.

Additional stakeholders should be evaluated and surveyed. These persons would include past, present, and future students, faculty and staff of universities, extension personnel, and administrative professionals. Identifying even more stakeholders that could benefit from such a class would aid in its development. Building the delivery and methods capability of the course could be effectively tailored to meet many professionals and students if data was gathered based on their future, current or past involvement in such a course.

A study should be conducted to determine the cultural and social benefits of such a class at the university level. Identifying the specific descriptive statistics of each individual that may be enrolled in such a class could help in identifying the type of people that were taking the class. Would the exposure of the course content open the

gates of social interaction for students that may have never considered the global condition in which they live? What cultural conditions might be identified by students enrolled in the course? The course could be a focal point for new students in the agriculture discipline to expose them to global agriculture conditions from points across the globe.

A study should be conducted to determine if such a class could be delivered to all undergraduates in a university setting or to a specific list of majors within a post secondary institution. If the class could be delivered to all undergraduates within an institution, then the impact of the course would have a much broader scope. Every student would have the benefit of understanding the international conditions on the food and fiber landscape from multiple countries. They may garner a deep appreciation for the current agriculture commodities that are available to them in their own country. This could in itself develop more respect for what they have and the opportunities they may have available because of the agricultural products they do not have to sustain or produce on their own.

The course would also need to include more areas in production practices, trade skills, vocational skills, and technological skills. The lack of identification of these areas from the panel suggests that their focus is not on the practical arts but on the social and managerial aspects of culture diversity. This could be due to the nature of the selected panelists being more informed on the education and extension elements of agriculture. This would lead them to select items that they are familiar with and could explain and process in such a course. The panel might have already have training in one of theses areas and see the need for addressing those type of skills not as important. The panelists

may have come from diverse training and technical backgrounds and know that the production and technical areas are needed as they are already developed. The panel may also have unique experiences in which they can share this information within a broader subject area or discipline and feel they can link these items with other components.

The focus on the extension areas from research questions one and two shows a unique interest from the panel in this area. Increasing the size of the expert panel may increase the likelihood of consensus statements being less focused on one particular area and having a more diverse set of responses. The responses may also have been more varied if the panelists represented a more international group than the five experts from universities not located in the United States. If the panel had an equal representation from universities from every continent, perhaps the focus would have been different.

The researcher suggests that the developed international agriculture education class could be taught in post secondary institutions within the department, school, or college of agriculture. It could be taught in a multiple degree program within any department, school, or college within a university. The competencies of the class should be reviewed and revised every year to maintain the shift in technology and global thought processes. The course would give all students the ability to visualize the various roles agriculturalists play in our nation's economy and the economy of other countries.

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Appendices

Appendix A

IRB Approval Letter

November 2, 2009

Dr. M Todd Brashears Ag Ed & Communications Mail Stop: 2131

Regarding: 502061 The Inclusion and Content of an International Agricultural Education Course at the Post Secondary Level: A Delphi Study

Dr. M Todd Brashears:

The Texas Tech University Protection of Human Subjects Committee approved your claim for an exemption for the proposal referenced above on October 29, 2009.

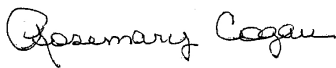
Exempt research is not subject to continuing review. However, any modifications that (a) change the research in a substantial way, (b) might change the basis for exemption, or (c) might introduce any additional risk to subjects must be reported to the IRB before they are implemented.

To report such changes, you must send a new claim for exemption or a proposal for expedited or full board review to the IRB. Extension of exempt status for exempt projects that have not changed is automatic.

The IRB will send annual reminders that ask you to update the status of your research project. Once you have completed your research, you must inform the Coordinator of the Committee either by responding to the annual reminder or by notifying the Coordinator by memo or e-mail (donna.peters@ttu.edu) so that the file for your project can be closed.

Sincerely,

Rosemary Cogan, Ph.D., ABPP Protection of
Human Subjects Committee



Appendix B

Letter of Participation

Sir/Madam,

Due to your work and experience as an active and effective contributor to Agriculture Education on an International level, Dr. Todd Brashears (dissertation committee chair) has nominated you as a Delphi panel member representing a broad frame of experts in International Agriculture Education to identify curricular components of courses offered in International Agriculture Education. I hope you will accept this invitation to join the expert panel. The Delphi panel expects to include university professionals from institutions from across the globe.

You are asked to participate in three rounds of surveys, each requiring about an hour of critical thinking and written response. If you agree to serve, you may begin by completing the first round electronic instrument which will be sent to you seven days after the receipt of your confirmation to serve on the panel. You will have a seven-day window to reply to the first round instrument. All responses identifying you as a participant will be kept confidential. If you choose to participate, please reply to this email letter of invitation within seven days.

Round one will begin in January with Round three ending in July. It is critical however, that you participate in all three rounds.

Thank you in advance for your participation and professional contribution to Texas Tech University and this research study. I believe that your contribution to this study is a positive and proficient step in further developing the understanding of International Agriculture Education Curriculums.

Sincerely,

Tom Kingery
Doctoral Candidate, Texas Tech University
(765) 461-2602

Appendix C

Round One Invitation Letter

Responder code no.

Dr.

Thank you for accepting the role as A Delphi panel member in this research study.

Please follow the link provided in this email to answer the first round questions. Also, please type in the random responder code that has been issued in this email.

May I please have your responses to these questions before the end of the day on February 11, 2008? Your contribution to the panel is critical. Thank you in advance for sharing your expertise.

Survey Link:

Sincerely,

Tom Kingery
Doctoral Candidate, Texas Tech University
(765) 461-2602

Appendix D

Round Two Invitation Letter

Delphi Panel – Round 2
April 29, 2008

Delphi Panel Member,

Thank you for your patience and participation in this Delphi Study on International Agriculture Curriculums. The first round has been completed and the link to the second round is located below. Your contribution to this research and as an active panel expert is crucial to this study.

The statements from International Education Curriculums are provided. Statements are divided into three sections based on the three questions asked in Round 1. Original statements have been dissected and/or converged with duplicate statements listed only once. If you believe that one of your statements is not reflected in the list, please add to the last page and indicate your level of agreement.

Type directly into the document and include your responder number.

Please read each statement and quantify your level of agreement with the statement. One (1) means **STRONGLY DISAGREE** AND six (6) means **STRONGLY AGREE**.

Please have the survey completed by May 12, 2008.

Thank you in advance for your participation and professional contribution to Texas Tech University and this research study. I believe that your contribution to this study is a positive and proficient step in further developing the understanding of International Agriculture Education Curriculums.

Survey Link:

Sincerely,

Tom Kingery
Doctoral Candidate, Texas Tech University
(765) 461-2602

Appendix E

Round Three Invitation Letter

Delphi Panel – Round 2
June 22, 2008

Congratulations on making it to the third and final round.

Round 3 will be an attempt to reach consensus of reconsideration of eliminated statements on ratings for International Education Curriculums.

The statements from International Education Curriculums are provided. Statements are divided into three sections based on the three questions asked in round 1 and the responses collected in round 2. These 186 statements are the items selected for elimination. If you choose to reconsider a statement, please read each statement carefully and mark each one according to your corresponding level of agreement.

Please read each statement and quantify your level of agreement with the statement. One (1) means STRONGLY DISAGREE AND six (6) means STRONGLY AGREE.

Thank you for contributing to this important study in International Education Curriculums.

Survey Link:

Sincerely,

Tom Kingery
Doctoral Candidate, Texas Tech University
(765) 461-2602

Appendix F

Round One Statements Collected

Research Question 1: What disciplines of agriculture should be included in an international agricultural education course at the university level?

Agricultural Engineering - Farm mechanization and technology

Agronomy - Plant sciences, Plant pathology, Crop production, Post-harvest management, Plant genetics, Soil fertility management, Crop pest management, Soil science, Production management programs, Weed science, Agro-forestry, Water resource management, Land resources, Food safety and quality assurance, Entomology and IPM systems, Environmental management.

Animal Science - Animal sciences, Non-ruminant animal production, Meat production, Animal production, Fisheries management, Ruminant animal production, Virology, Animal breeding, Animal physiology Poultry farming.

Economics - Entrepreneurship Organizational planning, Marketing, Value chains and marketing, Global economy, Agricultural finance Farm management, International marketing and certification standards, Macroeconomics, Production management programs, Financial management, Structure program management' Project planning Microeconomics.

Education - Administration and supervision in schools, Research methods Learning theories Computing and research writing, Social psychology, Educational psychology, Curriculum development, Social, economic, and political issues, Rural sociology, Statistics, Agricultural education program management, Taxonomies of educational objectives, Philosophies of education and their applications, Agricultural biotechnology Agricultural development, Curriculum development, Educational theory and practice, Gender equity, International scientific and extension dialogue and research activities, Youth development, youth development and learning theory, Adult learning, Adult development and learning theory, Needs assessment, Educational psychology, Elements of the psychology of learning, Methods of assessing achievement, Educational measurement and testing Evaluating effectiveness of programs and institutions, Cultural education, Agriculture knowledge systems, Educational concept and theories, Global ethics, ethical and positive values, ethical standards including honesty & integrity, Motivation strategies, motivation as it applies to participation

and engagement, organizational behavior, Agriculture leadership, leadership theory and practice, developing research and grant proposals

Extension - Agricultural Extension, Extension education, Public and private extension systems, Agriculture social systems, Rural and community development, Role of agriculture in a developing nation's economy, Human resource development, Guiding others in collaborative problem solving, Agricultural and extension education policies, Extension program planning and evaluation, Models of agricultural and extension education, Philosophies of agricultural extension, Cross cultural communication, Intercultural communications, Consensus building, and conflict resolution

Research Question 2: What competencies (knowledge, skills, and abilities) in international agriculture that are needed by students and should be developed in a course in international agricultural education at the university level?

Knowledge - Communication knowledge, Social consciousness, Future trends in international development, Extension education, Civic Education, Conservation of natural resources.

Farming systems research, Extension models, HIV, Principles of the adoption diffusion process, Basics of the political system and the organization of government in other societies, Current world situation, World international development agencies, Farmer field school.

Extension models in reducing rural poverty, A systems perspective of agriculture, Knowledge in basic agricultural sciences, Environmental and sustainable development issues, Agricultural development.

Roles of change agents with clientele who possess different cultural, societal, environmental, developmental, and technological needs, Understand the concept of the self directed learner as a basis for working with adults in either formal or non-formal settings.

Roles of extension in disseminating technical, marketing, management, and policy information to farmers, Appreciate the concept of the "Ugly American" and its relation to building trust, credibility and human capacity.

Strategies for stakeholder participation in extension planning, Information technology in extension systems in developing countries, Strategies to acquire knowledge, skill, and understanding among selected knowledge bases.

Achieve economies of scale and market access issues, Agriculture subject matter, Administrative competencies, Communication competencies, Human relations competencies, Technical competencies, Economic competencies, Curriculum development.

Agricultural production systems, Integrated community economic development, The role of distance education in agricultural education programs, Adult education methods and strategies, Collaborative teaching and learning processes, Understand and value the culture and context of others, Religious practices in other societies, Economic philosophy and principles of the economy in other societies, Youth leadership development.

Vocational and technical education necessary to achieve long-term agricultural development, Development of training materials in agriculture, Food quality, safety assurance and certification standards, Gender in agriculture, genders issues in international agriculture.

An understanding of agricultural and extension education programs in other countries, An understanding of governmental agencies (departments of agriculture, ministries of agriculture) in other countries, An understanding of the role of non-governmental organizations (NGO) in agriculture around the world, Extension Communication.

How indigenous culture and traditions influence agricultural production practices, Personal and professional aspects of working in different socio-cultural contexts and in an international environment, Internationalizing agriculture education, Institutional programs

Skills - Community leadership organization, Managing and conserving rural life/communities, Methods to transfer skills to peers and students, Program Planning, Organizing and evaluating experiential methods, Teaching and advising on the basis of individual needs, skills, abilities, and age groups, Teaching on the basis of group and individual planning, thinking, and evaluation processes.

Teaching skills in individual, team-teaching, face-to-face classroom, and at-a-distance settings, Peace and conflict resolution, Teaching theory, principles, and practices, Teaching on the basis of institutional, community, regional, national or international contexts and resources.

Engaging people in successful problem-solving activities, Skills at working with other cultures, Use effective communication and leadership principles, Problem solving approach in knowledge dissemination.

Methods of teaching practical or psychomotor skills to rural young people, Teaching students to develop the seven perceptive levels of learning, Computer applications and use of Internet, Leadership theory and practice, and team-building skills.

Supervising skills in agricultural education institutions, Competence development, Goal setting and rewards, People orientation when working as an agricultural/extension educator, Cross cultural communication.

Apply the basic principles of effective teaching and learning, Apply the principles of consensus building and conflict resolution, Participatory research, HRD management skills, Time management and priority

development, Computing, Report writing.

Higher order thinking skills, including evaluation and synthesis, Systems skills and methodologies (ecology, agro ecosystem analysis/appraisal, group dynamics, and system improvement.

Various production (e.g., crop and animal) management skills, Computer and technology implementation skills, Appropriate methodology in identifying local and regional needs.

Abilities - Development of training materials in agriculture, Ability to listen, plan, evaluate, guide, Apply the basic principles of effective teaching and learning, Program development process including needs assessment, program planning, program implementation and stakeholder evaluation.

Agriculture in environmental conservation and sustainable agricultural development, Identify the resources available in the context of the issue or problem to be addressed.

Develop effective community demonstrations utilizing community involvement, Global dimensions (internationalization) of agriculture roles and management of rural youth programs, Need for adaptability.

Roles of change agents with clientele who possess different cultural, societal, environmental, developmental, and technological needs, Research methods.

Approaches and strategies for facilitating farmer-extension-research linkages, Preparing lesson plans and instructional materials to enhance active learning and the development of higher-level cognitive skills.

Applying flexible and innovative techniques in crossing traditional boundaries between secondary level and post-secondary level institutional settings whether developing formal or non-formal educational programs, Leadership and administration in agricultural and extension education.

To acquaint students with the interaction among available resources, existing technology and science, farmers, culture and context, and the role educational channels play in the adoption of innovations (technology and science) to produce more quantity or high quality food and fiber, International Marketing and arguing issues of fair trade.

Self reliance, Program management, Articulation management, Strategies for Distance Delivery, Action research, Know how to implement their knowledge base by being creative in using indigenous knowledge, skills and resources, Team approach to enhance the learning experience

Research Question 3: How should an international agricultural education class be used in multiple degree programs at the university level?

Use - As an area of specialization, a minor, or a major area of study, Required in Ag Ed, The "class" must be part of a "program" not a stand-alone class, A requirement for any minor in international agriculture, An elective for students in colleges of agriculture, Required.

To acquaint students with the interaction among available resources, existing technology and science, farmers, culture and context, and the role educational channels play in the adoption of innovations (technology and science) to produce more quantity or high quality food and fiber.

Evolve advocacy and lobbying strategies for fair trade in the world, Debate current and emerging issues in agriculture and how these impact on other sectors of the economy, Discuss various food policies and their implications for development and peace.

As an instrument of change in the global village. This means, change in skills, knowledge and attitudes of the learners, who will in turn influence change in agricultural production technologies in their communities or countries, Share ideas and experiences.

Each group should focus on the degree program for which it has registered, It should be a cross discipline course for all students in Colleges of Agriculture, A degree requirement for students in selected areas, The course can be viewed as having an international orientation with the broad definition of agricultural education which encompasses all agricultural discipline areas.

A single introductory subject or double subject, available to students in undergraduate (final year), graduate, master's and PhD programs. Can be followed up with real-life 'case-study' subjects involving individual or group activities.

Develop a series of appropriate courses that would lead to a minor in International Agricultural Education, Serve as an elective or fulfill the multicultural requirement many universities have, The class should be an option in most undergraduate and graduate programs.

APPENDIX G

Round Two Statement Rating Tables

| Statements from Question 1 | | | | | | | |
|--|--|-----------------|--------------------------|-----------------------|--------------|-----------------------|-----------------|
| Please quantify your level of agreement that the following disciplinary area of agriculture should be included in an international agricultural education course at the university level. | | | | | | | |
| | Strongly Disagree | Disagree | Somewhat Disagree | Somewhat Agree | Agree | Strongly Agree | |
| | 1 | 2 | 3 | 4 | 5 | 6 | Response |
| 1. | Plant sciences | | | | | | |
| 2. | Plant pathology | | | | | | |
| 3. | Agronomy | | | | | | |
| 4. | Crop production | | | | | | |
| 5. | Post-harvest management | | | | | | |
| 6. | Crop pest management | | | | | | |
| 7. | Weed science | | | | | | |
| 8. | Agro-forestry | | | | | | |
| 9. | Plant genetics | | | | | | |
| 10. | Social, economic, and political issues | | | | | | |
| 11. | Non-ruminant animal production | | | | | | |
| 12. | Animal sciences | | | | | | |
| 13. | Meat production | | | | | | |
| 14. | Fisheries management | | | | | | |
| 15. | Animal production | | | | | | |
| 16. | Ruminant animal production | | | | | | |
| 17. | Animal breeding | | | | | | |
| 18. | Animal physiology | | | | | | |
| 19. | Poultry farming | | | | | | |
| 20. | Social psychology | | | | | | |
| 21. | Educational psychology | | | | | | |
| 22. | Research methods | | | | | | |
| 23. | Curriculum development | | | | | | |
| 24. | Administration and supervision in schools | | | | | | |
| 25. | Learning theories | | | | | | |
| 26. | Agricultural education program management | | | | | | |
| 27. | Philosophies of education and their applications | | | | | | |
| 28. | Taxonomies of educational objectives | | | | | | |
| 29. | Agricultural engineering & technology | | | | | | |
| 30. | Farm mechanization and technology | | | | | | |
| 31. | Water resource management | | | | | | |

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| 33. | Environmental management | |
| 34. | Cross cultural communication | |
| 35. | Intercultural communications | |
| 36. | Rural sociology | |
| 37. | Agricultural Extension | |
| 38. | Extension management and supervision | |
| 39. | Extension education | |
| 40. | Soil fertility management | |
| 41. | Food safety and quality assurance | |
| 42. | Computing and research writing | |
| 43. | Entomology and IPM systems | |
| 44. | Soil science | |
| 45. | Value chains and marketing | |
| 46. | International marketing and certification standards | |
| 47. | Farm management | |
| 48. | Macroeconomics | |
| 49. | Agricultural finance | |
| 50. | Financial management | |
| 51. | Project planning | |
| 52. | Statistics | |
| 53. | Microeconomics | |
| 54. | Agricultural biotechnology | |
| 55. | Agricultural development | |
| 56. | Curriculum development | |
| 57. | Rural and community development | |
| 58. | Role of agriculture in a developing nation's economy | |
| 59. | Human resource development | |
| 60. | Guiding others in collaborative problem solving | |
| 61. | Agricultural and extension education policies | |
| 62. | Global economy | |
| 63. | Extension program planning and evaluation | |
| 64. | Models of agricultural and extension education | |
| 65. | Philosophies of agricultural extension | |
| 66. | Methods of assessing achievement | |
| 67. | Production management programs | |
| 68. | Structure program management | |
| 69. | Evaluating effectiveness of programs and institutions | |
| 70. | Virology | |
| 71. | Educational measurement and testing | |
| 72. | Needs assessment | |

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| 73. | Agriculture leadership, leadership theory and practice, developing research and grant proposals | |
| 74. | Educational theory and practice | |
| 75. | International scientific and extension dialogue and research activities | |
| 76. | Youth development, youth development and learning theory | |
| 77. | Adult learning, adult development and learning theory | |
| 78. | Educational psychology, elements of the psychology of learning | |
| 79. | Gender equity, gender equity issues | |
| 80. | Agriculture social systems | |
| 81. | Cultural education | |
| 82. | Agriculture knowledge systems, educational concept, theories, | |
| 83. | Global ethics, ethical and positive values, ethical standards including honesty & integrity | |
| 84. | Motivation strategies, motivation as it applies to participation and engagement, organizational behavior | |
| 85. | Public and private extension systems | |
| 86. | Organizational planning | |
| 87. | Consensus building, and conflict resolution | |
| 88. | Marketing | |
| 89. | Entrepreneurship | |
| | End of Question 1 Statements | |

| Statements from Question 2 | | | | | | | |
|---|---|-----------------|--------------------------|-----------------------|--------------|-----------------------|-----------------|
| Please quantify your level of agreement on the competencies (knowledge, skills, and abilities) in international agriculture that are needed by students and should be developed in a course in international agricultural education at the university level. | | | | | | | |
| | Strongly Disagree | Disagree | Somewhat Disagree | Somewhat Agree | Agree | Strongly Agree | |
| | 1 | 2 | 3 | 4 | 5 | 6 | Response |
| 90. | Communication knowledge | | | | | | |
| 91. | Farming systems research | | | | | | |
| 92. | Extension models | | | | | | |
| 93. | Community leadership organization | | | | | | |
| 94. | Roles of extension in disseminating technical, marketing, management, and policy information to farmers | | | | | | |
| 95. | Global dimensions (internationalization) of agriculture roles and management of rural youth programs | | | | | | |
| 96. | Achieve economies of scale and market access issues | | | | | | |
| 97. | Agricultural production systems. | | | | | | |
| 98. | Managing and conserving rural life/communities | | | | | | |
| 99. | Strategies for stakeholder participation in extension planning | | | | | | |
| 100. | Environmental and sustainable development issues | | | | | | |
| 101. | Social consciousness | | | | | | |
| 102. | Agricultural development | | | | | | |
| 103. | Integrated community economic development | | | | | | |
| 104. | Extension models in reducing rural poverty | | | | | | |
| 105. | Information technology in extension systems in developing countries | | | | | | |
| 106. | Agriculture in environmental conservation and sustainable agricultural development | | | | | | |
| 107. | A systems perspective of agriculture | | | | | | |
| 108. | Roles of change agents with clientele who possess different cultural, societal, environmental, developmental, and technological needs | | | | | | |
| 109. | Approaches and strategies for facilitating farmer-extension-research linkages | | | | | | |
| 110. | Teaching theory, principles, and practices | | | | | | |
| 111. | Need for adaptability | | | | | | |
| 112. | Strategies to acquire knowledge, skill, and understanding among selected knowledge bases | | | | | | |

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| 113. | Engaging people in successful problem-solving activities | |
| 114. | Methods to transfer skills to peers and students | |
| 115. | Organizing and evaluating experiential methods | |
| 116. | The role of distance education in agricultural education programs | |
| 117. | Teaching skills in individual, team-teaching, face-to-face classroom, and at-a-distance settings | |
| 118. | Preparing lesson plans and instructional materials to enhance active learning and the development of higher-level cognitive skills | |
| 119. | Teaching and advising on the basis of individual needs, skills, abilities, and age groups | |
| 120. | Teaching on the basis of group and individual planning, thinking, and evaluation processes | |
| 121. | Teaching on the basis of institutional, community, regional, national or international contexts and resources | |
| 122. | Adult education methods and strategies | |
| 123. | Collaborative teaching and learning processes | |
| 124. | Methods of teaching practical or psychomotor skills to rural young people | |
| 125. | Teaching students to develop the seven perceptive levels of learning | |
| 126. | Applying flexible and innovative techniques in crossing traditional boundaries between secondary level and post-secondary level institutional settings whether developing formal or non-formal educational programs | |
| 127. | Computer applications and use of Internet | |
| 128. | Youth leadership development | |
| 129. | People orientation when working as an agricultural/extension educator | |
| 130. | Leadership theory and practice, and team-building skills | |
| 131. | Supervising skills in agricultural education institutions | |
| 132. | Competence development | |
| 133. | Goal setting and rewards | |
| 134. | Leadership and administration in agricultural and extension education | |
| 135. | HRD management skills | |
| 136. | Time management and priority development | |
| 137. | Vocational and technical education necessary to achieve long-term agricultural development | |
| 138. | To acquaint students with the interaction among available resources, existing technology and science, farmers, culture and context, and the role educational channels play in the adoption of innovations (technology and science) to produce more quantity or high quality food and fiber | |
| 139. | Research methods | |

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| 140. | Computing | |
| 141. | Report writing | |
| 142. | Higher order thinking skills, including evaluation and synthesis | |
| 143. | Systems skills and methodologies (ecology, agro ecosystem analysis/appraisal, group dynamics, and system improvement | |
| 144. | Development of training materials in agriculture | |
| 145. | Peace and conflict resolution | |
| 146. | International Marketing and arguing issues of fair trade | |
| 147. | Food quality, safety assurance and certification standards | |
| 148. | Gender in agriculture, genders issues in international agriculture | |
| 149. | HIV | |
| 150. | Self reliance | |
| 151. | Conservation of natural resources | |
| 152. | Civic Education | |
| 153. | Technical competencies | |
| 154. | Agriculture subject matter | |
| 155. | Administrative competencies | |
| 156. | Communication competencies | |
| 157. | Human relations competencies | |
| 158. | Program Planning | |
| 159. | Economic competencies | |
| 160. | Curriculum development | |
| 161. | Program management | |
| 162. | Articulation management | |
| 163. | Various Production (e.g., crop and animal) Management Skills | |
| 164. | Computer and Technology implementation Skills | |
| 165. | Strategies for Distance Delivery | |
| 166. | Knowledge of agricultural systems from around the world | |
| 167. | An understanding of agricultural and extension education programs in other countries | |
| 168. | An understanding of governmental agencies (departments of agriculture, ministries of agriculture) in other countries | |
| 169. | An understanding of the role of non-governmental organizations (NGO) in agriculture around the world | |
| 167. | Extension Communication | |
| 168. | Action research | |
| 169. | Know how to implement their knowledge base by being creative in using indigenous knowledge, skills and resources | |
| 170. | Appropriate methodology in identifying local and regional needs. | |
| 171. | How indigenous culture and traditions influence agricultural production practices | |
| 172. | Personal and professional aspects of working in different socio- | |

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| | cultural contexts and in an international environment | |
| 173. | Internationalizing agriculture education | |
| 174. | Institutional programs | |
| 175. | Team approach to enhance the learning experience | |
| 176. | Cross cultural communication | |
| 177. | Extension education | |
| 178. | Participatory research | |
| 179. | Farmer field school | |
| 180. | Current world situation | |
| 181. | World international development agencies | |
| 182. | Future trends in international development | |
| 183. | Program development process including needs assessment, program planning, program implementation and stakeholder evaluation | |
| 184. | Basics of the political system and the organization of government in other societies | |
| 185. | Principles of the adoption diffusion process | |
| 186. | Apply the principles of consensus building and conflict resolution | |
| 187. | Problem solving approach in knowledge dissemination | |
| 188. | Identify the resources available in the context of the issue or problem to be addressed | |
| 189. | Understand and value the culture and context of others | |
| 190. | Religious practices in other societies | |
| 191. | Economic philosophy and principles of the economy in other societies | |
| 192. | Apply the basic principles of effective teaching and learning | |
| 193. | Understand the concept of the self directed learner as a basis for working with adults in either formal or non-formal settings | |
| 194. | Develop effective community demonstrations utilizing community involvement | |
| 195. | Appreciate the concept of the "Ugly American" and its relation to building trust, credibility and human capacity | |
| 196. | Use effective communication and leadership principles | |
| 197. | Ability to listen, plan, evaluate, guide | |
| 198. | Skills at working with other cultures | |
| 199. | Knowledge in basic agricultural sciences | |
| | End of Question 2 Statements | |

| Statements from Question 3 | | | | | | |
|--|--|-----------------|--------------------------|-----------------------|--------------|-----------------------|
| Please quantify your level of agreement on how an international agricultural education class could be used in multiple degree programs at the university level? | | | | | | |
| | Strongly Disagree | Disagree | Somewhat Disagree | Somewhat Agree | Agree | Strongly Agree |
| | 1 | 2 | 3 | 4 | 5 | 6 |
| 200. | As an area of specialization, a minor, or a major area of study | | | | | |
| 201. | The "class" must be part of a "program" not a stand-alone class | | | | | |
| 202. | A requirement for any minor in international agriculture | | | | | |
| 203. | To acquaint students with the interaction among available resources, existing technology and science, farmers, culture and context, and the role educational channels play in the adoption of innovations (technology and science) to produce more quantity or high quality food and fiber | | | | | |
| 204. | A single introductory subject or double subject, available to students in undergraduate (final year), graduate, master's and PhD programs. Can be followed up with real-life 'case-study' subjects involving individual or group activities | | | | | |
| 205. | Share ideas and experiences | | | | | |
| 206. | As an instrument of change in the global village. This means, change in skills, knowledge and attitudes of the learners, who will in turn influence change in agricultural production technologies in their communities or countries | | | | | |
| 207. | Each group should focus on the degree program for which it has registered | | | | | |
| 208. | Required in Ag.Ed. | | | | | |
| 209. | An elective for students in colleges of agriculture | | | | | |
| 210. | It should be a cross discipline course for all students in Colleges of Agriculture | | | | | |
| 211. | A degree requirement for students in selected areas | | | | | |
| 212. | The course can be viewed as having an international orientation with the broad definition of agricultural education which encompasses all agricultural discipline areas | | | | | |
| 213. | Evolve advocacy & lobby strategies for fair trade in the world | | | | | |
| 214. | Debate current and emerging issues in agriculture and how these impact on other sectors of the economy | | | | | |
| 215. | Discuss various food policies and their implications for development and peace | | | | | |
| 216. | Develop a series of appropriate courses that would lead to a minor in International Agricultural Education | | | | | |

Appendix H

Round Three Statement Rating Tables for Reconsideration

Statements in Round III For Reconsideration by the Panel to the Question: What disciplines of agriculture should be included in an international agricultural education course at the university level?

Statement

Plant Genetics
Agriculture biotechnology
Educational measurement and theory
Statistics
Microeconomics
Plant pathology
Animal breeding
Social psychology
Educational psychology
Administration and supervision in schools
Taxonomy of educational objectives
Agriculture engineering and technology
International marketing
Macroeconomics
Agricultural finance
Financial management
Structure management programs
Educational theory and practice
Educational psychology
Weed science
Agro-forestry
Non-Ruminant animal production
Meat production
Ruminant animal production
Animal Physiology
Learning theories
Philosophies of educational
Farm mechanization and technology
Food safety quality assurance
Entomology and IPM systems
Production management programs
Virology
International scientific extension dialogue
Fisheries Management
Research methods
Computing and research writing
Value chains and marketing
Methods of assessing achievement
Evaluating effectiveness of programs
Adult learning development theory
Organizational planning

Plant sciences
Poultry farming
Soil fertility management
Soil science
Guiding collaborative problem solving education
Youth development and learning theory
Motivational strategies
Agronomy
Crop production
Post-Harvest management
Crop pest management
Animal science
Animal production
Environment management
Intercultural communication
Rural sociology
Fame management
Project planning
Curriculum development
Human resource development
Ag. leadership, theory, practice
Gender equity and issues
Cultural education
Agriculture knowledge systems
Global ethics
Entrepreneurship.
Curriculum development
Agriculture education program mgmt.
Water resource management
Land resources
Extension management and supervision
Agriculture development
Global economy
Needs assessment
Consensus building conflict resolution
Marketing

**Statements in Round III For Reconsideration with the Panel to the Question:
What competencies (knowledge, skills, and abilities) in international
agriculture are needed by students and should be developed in a course in
international agricultural education at the university level?**

Statement

Economic competencies

Achieve economies of scale and market access issues

Applying flexible and innovative techniques in crossing traditional boundaries between secondary level and post-secondary level institutional settings whether developing formal or non-formal educational programs

International Marketing and arguing issues of fair trade

Food quality, safety assurance and certification standards

Articulation management

Role of distance education in agriculture education programs

Supervising skills in agricultural education institutions

HRD management skills

Computing

Civic Education

Computer and Technology implementation Skills

Action research

Institutional programs

Organizing and evaluating experimental methods

Preparing lesson plans and instructional materials to enhance active learning and the development of higher-level cognitive skills

Teaching students to develop the seven perceptive levels of learning

Competence development

Goal setting and rewards

Peace and conflict resolution

HIV

Self reliance

Administrative competencies

Identify the resources available in the context on the issue or problem to be addressed

Economic philosophy and principles on the economy in other societies

Farming systems research

Agricultural production systems

Information technology in extension systems in developing countries

Teaching theory principles and practices

Need for adaptability

Collaborative teaching and learning processes

Computer applications and use of the Internet

Leadership theory and practice, and team-building skills

Time management and priority development

Research methods

Systems skills, including evaluation and synthesis

Development of training materials in agriculture

Various Production (e.g., crop and animal) Management Skills

Strategies for Distance Delivery

Appropriate methodology in identifying local and regional needs

Apply the basic principles of effective teaching and learning

Understand the concept of the self directed learner as a basis for working with adults in either formal or non-formal settings

Global dimensions (internationalization) of agriculture roles and management of rural youth programs

Managing and conserving rural life/communities

Strategies for stakeholder participation in extension planning

Social consciousness

Agricultural development

Integrated community economic development

Strategies to acquire knowledge, skill, understanding among selected knowledge bases

Teaching and advising on the basis of individual needs, skills, abilities, and age groups

Teaching on the basis of group and individual planning, thinking, and evaluation processes

Teaching on the basis of institutional, community, regional, national or international contexts and resources

Methods of teaching practical or psychomotor skills to rural young people

Vocational and technical education necessary to achieve long-term agricultural development

Report writing

Higher order thinking skills, including evaluation and synthesis

Technical competencies

Agriculture subject matter

Human relations competencies

Curriculum development

Personal and professional aspects of working in different socio-cultural contexts and in an international environment

Team approach to enhance the learning experience

Farmer field school

Basics of the political system and the org. of govt. in other societies

Apply the principles of consensus building and conflict resolution
Problem solving approach in knowledge dissemination
Understand and value the culture and context of others
Develop effective community demonstrations utilizing community involvement
Communication Knowledge
Roles of extension in disseminating technical, marketing, management, and policy information to farmers
A systems perspective of agriculture
Adult education methods and strategies
Youth leadership development
Gender in agriculture, genders issues in international agriculture
Communication competencies
Program planning
Extension Communication
Know how to implement their knowledge base by being creative in using indigenous knowledge, skills and resources
Cross cultural communication
participatory research
Current world situation
World international development agencies
Religious practices in other societies
Community leadership organization
Extension models in reducing rural poverty
Engaging people in successful problem solving activities
Methods to transfer skills to peers and students
teaching skills in individual, team teaching, face to face classroom, and at distance settings
People orientation when working as an agricultural/extension educator
Leadership and administration in agricultural and extension education
To acquaint students with the interaction among available resources, existing technology and science, farmers, culture and context, and the role educational channels play in the adoption of innovations (technology and science) to produce more quantity or high quality or high quality food and fiber
Program management
Knowledge of agricultural systems from around the world
An understanding of agricultural systems and extension education programs in other countries
An understanding of governmental agencies (departments of agriculture, ministries of agriculture) in other countries

How indigenous culture and traditions influence agricultural production practices

Internationalizing agriculture education

Extension education

future trends in international development

Program development process including needs assessment, program planning, program implementation and stakeholder evaluation

principles of the adoption diffusion process

Appreciate the concept of the "Ugly American" and its relation to building trust, credibility and human capacity

Use effective communication and leadership principles

**Statements in Round III For Reconsideration by the Panel to the
Question: How should an international agricultural education class be
used in multiple degree programs at the university level?**

Statement

Evolve advocacy and lobbying strategies for fair trade in the world
Each group should focus on the degree program for which it has
registered

Discuss various food policies and their implications for
development and peace

To acquaint students with the interaction among available
resources, existing technology and science, farmers, culture and
context, and the role educational channels play in the adoption of
innovations (technology and science) to produce more quantity of
high quality food and fiber

A single introductory subject of double subject, available to
students in undergraduate (final year), graduate, master's and PhD
programs. Can be followed up with real-life 'case study' subjects
involving individual or group activities

Share ideas and experiences

Required

The "class" must be part of a "program" not a stand-alone class
Debate current and emerging issues in agriculture and how these
impact on other sectors of the economy

Required in AgEd

The course can be viewed as having an international orientation
with the broad definition of agricultural education which
encompasses all agricultural discipline areas

Develop a series of appropriate courses that would lead to a minor
in International Agricultural Education

An elective for students in colleges of agriculture

Serve as an elective or fulfill the multicultural requirement many
universities have

The class should be an option in most undergraduate and graduate
programs

As an area of specialization, a minor, or a major area of study

As an instrument of change in the global village. This means,
change in skills, knowledge and attitudes of the learners, who will
in turn influence change in agricultural production technologies in
their communities or countries

It should be a cross discipline course for all students in Colleges of
Agriculture

A degree requirement for students in selected areas