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Faculty perceptions regarding the infusion of global perspectives into the College of Agriculture and Life Sciences curriculum: A comparative study

by

Ronaldo Lising Magtoto

A dissertation submitted to the graduate faculty

in partial fulfillment of the requirements for the degree of

DOCTOR OF PHILOSOPHY

Major: Agricultural Education

Program of Study Committee:
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The student author, whose presentation of the scholarship herein was approved by the program of study committee, is solely responsible for the content of this dissertation. The Graduate College will ensure this dissertation is globally accessible and will not permit alterations after a degree is conferred.

Iowa State University

Ames, Iowa

2017

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DEDICATION

With love

to:

my wife, Viena,

daughter, Mica,

and

son, Elijah.

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ABSTRACT

A comparative study was conducted to explore faculty perceptions regarding the infusion of global perspectives into the College of Agriculture and Life Sciences (CALS) curriculum at Iowa State University. King (1991) provided the previous base for the study, which enabled a comparison with data recently collected. This study may fill a void in the literature published in the context of the CALS faculty members' perceptions in infusing a global perspective into the curriculum over the periods covered. The gap between the previous and current study may reveal a possible new mindset and trend in the perceived benefits and barriers of infusing global perspectives into the curriculum.

An online survey using Qualtrics was used to collect data. The survey material was comprised of five parts: perception statements, critical content/topics, activities used to add global perspectives, opinions on the infusion of global perspectives and demographic information. Descriptive and inferential analyses were used to compare the data collected. Statistical differences were noted in the demographic and occupational information of gender, age and primary workload. There were also significant differences in students' activities used to add international perspectives, comparative reasons for the departmental curriculum problems, and activities for curriculum improvement. Four of the 16 identified perception statements and 10 of the 48 identified critical content/topics were found to be statistically different in the two years that were compared. ANOVA results for both perception statements and the critical content/topics were significantly different on the identified races in the 1991 study but not on the 2016 study.

Even after 25 years, the perceptions of CALS faculty members regarding the infusion of global perspectives has remained the same on majority of the statements for internationalization and perceived critical topics to be taught from a global perspectives.

CHAPTER 1. INTRODUCTION

Today, with advancements in technological and social media, the world is becoming smaller. This presents a challenge for educators to update and develop an awareness in their students of the global nature of society, particularly of the agriculture industry. It is also becoming apparent that agriculture education must consider interlinks among different agricultural systems, government, cultures and societies in which they function (Martin, 1989). Many scholars and administrators in universities have suggested the requirement to get involved in global learning; thus, there is a need to update the curriculum to reflect greater global issues (Bruening & Shao, 2005). Prior to the 21st century, Acker and Scanes (1998) had noted that international perspectives are important, centrally connected to the three-fold functions of agricultural universities. A recent Harvard University review on curriculum recommended that emphasis be given to internationalization of the curriculum (Bruening & Shao, 2005). Nevertheless, internationalizing undergraduate agricultural curriculum calls for multi-faceted efforts in curricular reform (Navarro, 2004).

Related to preparing and engaging students and also monitoring societal needs in the global arena, Molina and Lattimer (2013) asserted the high degree of significance for faculty members to prepare the students in having global knowledge and encourage them to appreciate more the cultures and traditions of other people around the world. The tendency to monitor needs in a global market and train students to meet these demands has been a growing trend in many countries to enable college graduates to work with international counterparts and compete in the global marketplace (Molina & Lattimer, 2013). While the process of globalization is not considered new because of the occurring regional interconnectedness through trade hundreds of years ago, the new century has sparked the

greatest periods of rapid change accelerated by new communication, transportation, and information technologies. The growing integration of local, national, and global economic, environmental, cultural, technological and political systems are characteristic outcomes of globalization (Arthur, Davies & Hahn, 2008).

The key elements of globalizing post-secondary student education at a Colleges of Agriculture requires the provision of an international component including research and undergraduate education to mark improvement and make the program be more relevant (Acker & Scanes, 2000). With the global revolution of the 21st century marked by breakthroughs in technology, researchers from different countries can communicate faster and can easily change the conduct of business, education, and research (Harder, Wingenbach & Rosser, 2007).

Internationalization of the curriculum can lead to cultural enrichment, greater knowledge of global systems, and desire to participate in sustainable food systems in the world (Bruening & Frick, 2004a). The importance of global education could not be underemphasized with the advent of technological breakthroughs in communication, information technology and transportation. It is not only necessary to simply be aware of the production aspects of food and fiber but also learn how they are interlinked with other nations' agricultural systems. In order for students to attain this knowledge, it is important for faculty members to appreciate the relevance of global perspectives in the subject matter that they are teaching. Each faculty member should pursue his or her discipline from three geographical perspectives: the United States, another developed country, and a developing or low-middle income country (Acker, 1999).

An immediate approach to globalizing agriculture is the infusion of global perspectives into existing subject matter in the curriculum. Nevertheless, why do some teachers choose to infuse more global views into their curriculum and some do not despite existing mission statements promoting internationalization? Andreasen (2003) conjectured that there are "…barriers that exist, real or imaginary regarding the internationalization of courses, departments, colleges and the university as a whole" (p. 1). Jones and Crawford (1985) indicated there is a declining trend among individuals taking part in overseas program activities previously observed when there are actually needs being anticipated.

As our world is becoming a globalized village, schools need to adopt a global-friendly curriculum for students to have greater understanding of a diverse society (Hendrix, 1998). While students have options of doing study abroad or international internship, appreciation of a global society will become more apparent if it is introduced, infused, or integrated in the curriculum. White (2016) asserted that, "…it is curriculum that merges self-awareness with global societal issues" (p. 278).

Background of the Study

A study conducted at the College of Agriculture at Iowa State University by Sammons (1995) recommended internationalizing existing courses by including international contents rather than simply requiring students to take classes with global perspectives. Because of the changes in the global scope of the agricultural industry, prospective employers are looking for graduates with global view and experiences, which would justify the globalization of existing curriculum (Conner & Roberts, 2013).

The strategic plan of Iowa State University for 2017-2022 includes the provision for educational opportunities to educate students in a way that they will be ready for jobs in the global market. It is in this context that infusion of global perspective into the curriculum becomes more important to educate highly competitive, market-ready graduates. The involvement of faculty members (especially from land-grant institutions) in international program activities is profoundly essential. U.S. land grant universities are entities, which are more than capable to lead in developing an awareness about the growing issues in agriculture. These universities were to provide technical assistance in agriculture to various institutions involved in agricultural research and extension needed in third world to reduce poverty. Acker (1999) posited that land-grant universities have strategic missions that promote the internationalization and the adoption of international components in their educational programs. With this is the assumption that Colleges of Agriculture should be looking at avenues on the integration/inclusion international components into the three-fold mission of research, teaching, and extension. Moreover, Etling and McGirr (2005) stated that partnerships among U.S. higher learning institutions and universities from other countries have often been challenging. Issues with trust, power, risks, and rewards have been common pitfalls. Partnership with other institution is crucial in the globalizing the education of students. There exists the need to understanding the mindsets of faculty members in the global infusion of agricultural knowledge and skills in order to provide useful information to help maximize their contributions to their institutions and to other countries. This will also be beneficial for strategic planning and policy directions within each department in the College.

In our interdependent world, the need to infuse global perspectives in education is becoming important for students to understand the benefits of an interconnected economy,

culture and politics around the world (Merryfield, 1998). Developing an appreciation of the different cultures, tradition, customs and history of other countries is important for agriculture students and should include the learning of the agricultural and economic systems of nations (Acker &Scanes, 1998). In order to accomplish this, faculty members should enhance students' experiences in the global arena to successfully infuse global perspectives in teaching their assigned courses (Acker & Scanes). In order to understand the need to help students become global citizens of the world, VanDerZanden and Iles (2013) suggested requiring courses with international perspectives be integrated to undergraduate curricula in universities, including Iowa State University.

College of Agriculture and Life Sciences Departments at Iowa State University

Fifteen departments are currently housed in the College of Agriculture and Life Sciences (CALS):

1. ***Agricultural and Biosystems Engineering (ABE):*** Formerly known as Department of Agricultural Engineering; it is has been a known to lead in giving engineering remedies to agricultural problems in the U.S. and around the world. It was previously called Agricultural Engineering.
2. ***Agricultural Education and Studies (AGEDS):*** The Department of Agricultural Education and Studies focuses on the teaching and learning processes.
3. ***Agronomy (AGRON):*** The objective of the department is to make crop production more efficient, more productive, and economically and environmentally sustainable.

4. ***Animal Science (ANS):*** The programs in the department include the combination of science and practice with innovation to cater to the emerging needs of animal producers.
5. ***Biochemistry, Biophysics & Molecular Biology (BBMB):*** This department's research is focused on the frontiers of biology such as metabolic networking; structure and function of enzymes, membranes, and hormones; computational approaches; genomic and proteomic technology; protein engineering; plant biotechnology; muscle structure and function; and the design and evaluation of drugs for the treatment of disease. It was previously called Biochemistry/Biophysics.
6. ***Ecology, Evolution, and Organismal Biology (EEOB):*** Comprised of 30 faculty members helping students whose research and education benefit from the interdisciplinary environment. It was formerly known as Animal Ecology.
7. ***Economics (ECON):*** Undergrad students are educated to analyze independently and objectively about the inherent economic nature of many of the world's problems, from basic decisions facing businesses and individuals, to the performance of the macroeconomic system, to global resource utilization issues.
8. ***Entomology (ENT):*** Students acquire a broad understanding of insects and related disciplines and are expected to have an in-depth command of their concentration.
9. ***Food Science and Human Nutrition (FSHN):*** The objective of the department is to improve human nutrition and health to have better quality of life through effective teaching, discovery, and extension in food and nutrition sciences. It was previously called Food Science and Technology.

10. ***Genetics, Development and Cell Biology (GDCB):*** Studies are primarily focused on the biological functions at the cellular level with the use of biochemical, molecular, genetic, and biochemical approaches to understand various biological function. It was previously called Zoology/Genetics.
11. ***Horticulture (HORT):*** The department is involved in the production and utilization of fruits and vegetables, nursery crops (trees, annuals, and perennials), turf grass, and ornamental crops in greenhouses.
12. ***Natural Resource Ecology and Management (NREM):*** With the use of comprehensive courses and practical experience, the students learn the necessary skills and knowledge needed to become successful professionals. It was previously called Forestry**.**
13. ***Plant Pathology and Microbiology (PLP):*** Faculty, students and staff conduct research studies in different discipline that include virology, bacteriology, nematology, mycology, and epidemiology and disease management. Educational programs are geared towards understanding the breadth of these areas. This was combination of the previous Plant Pathology and Microbiology.
14. ***Sociology (SOC):*** The department offers coursework leading to Bachelor of Arts, Bachelor of Science in Sociology or Criminal Justice.
15. ***Statistics (STAT):*** The main purpose of the Department and the Statistical Laboratory is the advancement of knowledge in statistics. This department was not previously in the CALS.

Purpose of the Study

This comparative study was conducted to explore faculty perceptions regarding the infusion of global perspectives into the College of Agriculture and Life Sciences curriculum in two periods. Currently, no similar studies have been conducted to further understand the perceptions of faculty members at this university except for a dissertation study, which was conducted 25 years ago by King (1991), who suggested at that time that further study in this area that should include younger, untenured faculty. A thorough search of current literature has not revealed any new or follow-up studies.

Thus, the current study attempted to fill a void in the literature published in the context of the CALS faculty members' perception of infusing a global perspective into the curriculum. The gap during this period of time (1991-2016) and findings of the current study may reveal a new mindset and a trend toward understanding the perceived benefits and barriers of infusing global perspectives into the curriculum.

The purpose of the study was to assess, analyze and compare the perceptions of the faculty members of Iowa State University – College of Agriculture and Life Science (ISU-CALS) regarding the infusion of global perspectives into the curriculum. More specifically, the study was conducted to:

1. Identify the extent to which ISU-CALS teaching faculty agree or disagree with the perception statements regarding the infusion of global perspectives into the curriculum;
2. Identify topics that present challenges to including a global perspective in the study of agriculture at ISU-CALS;

3. Enumerate and analyze the demographic information of faculty members in the CALS;
4. Identify activities presently utilized by ISU-CALS faculty to include a global perspective in the curriculum; and,
5. Make a comparison of the perspectives faculty members from 25 years ago and the current faculty members in ISU-CALS.

Significance of the Study

The results of this study may serve several purposes. The findings may provide useful information to ISU-CALS program planning efforts to help maximize the infusion of a global perspective into the CALS curriculum. The results may also be helpful in strategic planning and policy direction within the ISU-CALS including faculty mobility and study abroad programs. The data regarding possible changes in the perceptions of faculty members over time may be rendered useful for long-term planning in human resource development and hiring policies that are consistent with the mission and vision of the institution.

The findings of this study may be used by other colleges within the university to undertake similar studies to determine their faculty members' level of perception in infusing international perspectives into their respective curriculum. The educational advances through research accomplished in U.S. land-grant universities are more meaningful in the context of the role they play in assisting and providing technical expertise to other countries. Furthermore, this study is in support of Iowa State University's strategic plan that encourages high impact research that addresses the grand issues of the 21st century for which one of the themes is preparing students to be global citizens.

Definition of Terms

The following terms were defined for application in this study:

Agricultural Education: "The scientific study of the principles and methods of teaching and learning as they pertain to agriculture." (Barrick, 1988, p. 5)

Assessment: "Conducted to determine whether students are achieving those educational outcomes that the creators of academic plans intended them to achieve." (Lattuca, 2009 p. 231)

College of Agriculture: It is, "generically colleges that offer undergraduate degrees in some of the following areas: agriculture, agricultural, applied, and life sciences, crop and animal sciences, biotechnology and related areas; international agriculture; food and fiber science and technology; agricultural economics and agribusiness; natural resources and environmental sciences; forestry, wildlife, recreation, fisheries, range, and water sciences; agricultural and biological engineering and technology; agricultural leadership, education, extension, and communication" (Kunkel, Maw, & Skaggs, pp. 3-4)

Curriculum: As an academic plan, "it implies a deliberate planning process that focuses attention on important educational considerations, which will vary by field of study, instructors, students, institutional goals, and so on." (Lattuca, 2009 p. 4)

Globalization: "Globalization is the flow of people, ideas, technology and trade across borders." (AUCC, 1998 p.1)

Inferential statistics**: "**Procedures that permit one to make tentative generalizations from sample data to the population from which the sample was drawn." (Ary et al., 2010 p. 643)

Reliability**:** "The extent to which a measure yields consistent results." (Ary et al., 2010 p. 649)

Survey: "Useful and efficient tool for learning about people's opinions and behaviors." (Dillman et al., 2009, p. 1)

***T*-test:** "A statistical procedure for testing hypotheses concerning the difference between two means; also used for other purposes." (Ary et al., 2010 p. 652)

Summary

This chapter provided an introduction, background of the study, the names of College of Agriculture and Life Sciences departments, purpose of the study, significance of the study and definition of terms. The next chapter will present an in-depth review of related literature review.

CHAPTER 2. REVIEW OF RELATED LITERATURE

The purpose of this study was to compare and analyze the perceptions of the faculty members of Iowa State University – College of Agriculture and Life Sciences (ISU-CALS) regarding the infusion of global perspectives into the agricultural curriculum. This chapter is divided into the following sections: (1) Functional Views of Global Education; (2) Benefits and Barriers to Educational Globalization; (3) Motivation to Globalization; (4) A Reconstructivist Approach to Globalization; (5) Faculty Roles in Survey; (6) Theoretical Framework; (7) Conceptual Base; (8) Research Questions; and (9) Summary.

Functional Views of Global Education

Global education may have several meanings to different individuals. In this study, the definition provided by Tye (1990) is used as a reference in setting the stage for discussion regarding the functional views of global education:

> Global education involves learning about those problems and issues that cut across national boundaries and about the interconnectedness of systems - ecological, cultural, economic, political and technological. Global education involves perspective taking – seeing things through the eyes and minds of others – and it means the realization that while individuals and groups may view life differently, they also have common needs and wants. (p. 5)

According to Sny (1980), "Global education is the lifelong growth, in understanding, through study and participation, of the world community and the interdependency of its peoples and systems – ecological, social, economic and technological" (p. 3). Given the significance of globalized education, the next logical step would be to determine what path a person might select to include global agriculture programs. Henrix (1998) recommended that a school should start to involve other stakeholders like the parents, teachers, administrators, students and members of the community in discussing goals they need to pursue in global

education. He further suggested, "…one encompassing goal can be that global education will expand the meaning and vision of citizenship – from the idea that a person is a citizen in a local community, state, and nation to the broader idea that each person is also a citizen in the global community" (p. 306).

When considering the context of global education, Torres (2015) posited that the quest for global citizenship education should consider the complex processes of globalization that are effectively changing one's conscious understanding of self in relationship to those in other parts of the world. There are three main trends in underscoring the need for global citizenship education:

> First, it should be noted that the world is changing, cultures are interesting and borders are more permeable than ever. The second reason is we have moved from a concept of citizenship in a city to a concept of citizenship in a nation-state and now we are at the sunrise of global citizenship in the age of global interdependence and cosmopolitanism. Historically, education has played a major role in these transformations, hence the quest for global citizenship education. The third main reason for global citizenship education is that the different forms of globalization are confronting cosmopolitan democracies as emerging models of political organization of citizenship. There must be a vision towards global citizenship education or the people and the planet will perish. (p. 28)

In order to successfully integrate a global agricultural perspective into the curriculum, faculty members need to acquire experience with globalization. Acker and Scanes (1998) noted that "…the inclusion and teaching of international perspectives in courses are enhanced when professors have firsthand experiences of what they are talking about" (p. 60). To help accomplish this goal, "…a college should encourage its scientists to link-up internationally in various synergistic manners" (p. 61).

In a study about global citizenship education and its implications for curriculum goals at the new global age, Zahabioun, Yousefy, Yarmohammadian, and Keshtiaray (2013) stated

that in setting and updating the objectives of the curriculum, it must meet the call for a deeper understanding of being citizen in a global community. In general, the objective of the curriculum should focus on educating citizens who will become ready in the fulfilling the present needs and become active participant in the local, national and global levels. With this understanding, the most crucial part in educating students to be global citizens is to prepare everything to realize it (Zahabioun et al.). The emergence of a global economy and breakthroughs in transportation and communication technology has created an interwoven global community. Davis, Evans, and Reid (2005) indicated that citizenship and global education are both currently receiving higher appreciation than what was seen before. Moreover, this claim proves to conceal the important achievements of global education compared to citizenship education, which was accorded a higher level of legitimacy than global education by others (Davis et al.).

The idea of an interwoven global education was first considered decades ago. Standish (2014) asserted "…the beginning of global education as a movement to reform education and society in the 1960s and 1970s" (p. 166). Moreover, globalization became a more dominant trend years later: "…a second wave of global or international education occurred from the 1990s alongside discussion of globalization, which brought the movement into mainstream education" (Standish, 2014, p. 166). Prior to this, Becker (1982) enumerated the goals of global education, one of which is:

> …to incorporate into the educational curriculum and the educational experience of each student a knowledge and empathy with cultures of the nation and the world … (and to) draw into existing courses of study illustrations and references to political, social and cultural themes; students will be encouraged to take a global perspective, seeing the world as a whole. (p. 231)

Global education can bring about unity among different cultures and peoples. According to Hendrix (1998), "…the impetus of a philosophical foundation for global education is the affirmation of our common unity with people throughout the world" (p. 306). The motivating force for global education implementation is broad, in which "…the scope of the global education curriculum must be determined by the philosophy of an evolving world, an analysis of the current realities in which students live, an analysis of the requirement of world citizenship in the 21st century, and an understanding and appreciation of those realities from the viewpoint of history, humanities and policy studies, and other fields" (p. 306). This assertion is consistent with fully understanding the breadth of global agricultural curriculum.

Miller-Perrin and Thompson (2014) studied outcomes of global education with external and internal change associated with study abroad, and indicated that "…by stretching college campus borders across the globe, we avail the students with the opportunity to transform internally and externally in ways that will last a lifetime" (pp. 86-87). This statement refers to the students and the institutions who wish to engage to the priceless transformation of life experience of study abroad by "…learning to embrace, cultural, spiritual and intellectual diversity and conflict will broaden students' horizons, enhance respect for others' views and deepen their sense of place in the world" (p. 86). Furthermore, in a study about globalizing the secondary agricultural education curriculum through participation in study abroad program, Sharp and Roberts (2013) suggested that "…efforts to develop globalized curricula for secondary students should be increased" (p. 56). The increase suggested was to develop a globalize curricula require the adjustment based on the social movements that calls for reform efforts. In a book chapter on an international perspective on science curriculum development and implementation, Coll and Taylor (2012)

posited that "…science curriculum development and implementation internationally have been enacted in an enormous variety of educational contexts" (p. 771). They emphasized that "…developing countries have invested heavily in school science education since the 1960s, mostly in order to foster economic development and improve the quality of life" (p. 772).

In a study about changing higher education curricula for a global and multicultural world, Morey (2000) posited: "…dramatic demographic changes in the cultural and linguistic diversity of people are occurring in many nations throughout the world" (p. 25). To address the growing changes in the global educational arena, higher education institutions must adopt to changes and "…these changes have challenged higher education institutions to modify their curricula and instructional strategies to meet the needs of diverse learners and to prepare all graduates to have the awareness, knowledge and skills to be effective in a diverse society" (p. 25). Morey's assertions support the findings of a study of governor school scholars on global awareness conducted by Radhakrishna and Dominguez (1999), which revealed that "…awareness and understanding of international concepts among governor schools scholars has provided ample justifications to accelerate curricular changes relative to international education in our schools, colleges, and universities" (p. 21). The authors added that "…schools, colleges and universities have major role to play in infusing international awareness and understanding concepts into the curriculum" (p. 21).

In an article on international curriculum for the professions, Christensen (1988) posited that "…no college or university graduates have been properly educated unless they have attained an international perspective in their curricula or profession … in carrying out their responsibilities to their students, universities must provide them with an understanding of how the diversity of cultures will affect them professionally and personally" (p. 27).

Related to this, Gouldthorpe, Harder, Roberts, and Stedman (2012), in their work on understanding the outcomes from a faculty travel abroad, claimed that "…faculty aspired to change their teaching by developing study-abroad programs, integrating global activities into their on-campus courses, and adopting culturally sensitive textbooks" (p. 22). The faculty broadened their horizons on the cultural, social, environmental issues, which will be useful in their research and teaching endeavors (p. 22).

When awarding a scholarship for the teaching of international ethics and globalizing the curriculum, Runte (2001) proposed that: "…several means by which all students at all levels of education can achieve global awareness of a personalized basis; these would require entering university freshmen and of exiting graduating seniors to be taught simultaneously in networks of higher education institutions all over the world" (p. 39). Runte argued, "…if we do not essay to meet the challenges of globalization by renewing our commitment to the education and re-education of the generations to come, we shall have failed in our responsibilities as global citizens" (p. 45).

In a commentary by Acker and Scanes (2000) about the case of globalizing post-secondary student education at colleges of agriculture, the authors opined that "…the globalization of research and graduate education in agriculture is a key driver of quality improvement whether the context is in the U.S. land-grant system or another agricultural university system" (p. 53). They also added that "…departments of agricultural and extension education can benefit from increased efforts to globalize both the coursework offered as well as the research undertaken by faculty and students" (p. 53).

Related to the aforementioned commentary on globalizing post- secondary education at colleges of agriculture, Conner, Roberts and Harder (2014) noted in a faculty cultural adaption study that "…college of agriculture graduates must be prepared to work effectively within global workforce and have and have cross cultural experiences" (p. 115). Since not all students can take part in international travel, at least faculty members should gain international exposure so they can successfully infuse global perspectives when teaching their courses to benefits those students who have not experienced study abroad (p. 115).

It must be noted that faculty cultural experience may take different stages and this has to be considered for future studies (Conner et al., 2014, p. 121). With regards to faculty perspectives on ways on how to internationalize the post-secondary agricultural curriculum, Navarro (2004) recommended to "…support a quality, multifaceted effort in curricular reform, with a complementary academic program and institutional strategies implemented in a balanced and synergistic manner" (p. 304). Navarro further suggested to "…increase, diversify and balance provision of funds, support, recognition, and release time among faculty participating in different academic program strategies including emphasis on (but not limiting it to) mobility and infusion efforts; also provide intellectual support to those requesting it" (p. 304).

In a separate study, Bruening and Shao (2005) argued that "…adding relevant international examples in the coursework represents the first level of student academic international awareness" (p. 48). In addition, "…a fully actualized internationalized curriculum means that students should demonstrate a positive attitude toward other cultures, understand and articulate the relationship between countries, and possess the ability to work effectively in a global setting" (p. 48-49).

When writing about the goals for global education, Becker (1982) emphasized that "…consideration of goals advocated for global studies provides one useful insight into what proponents of global education take to be the most important and worthwhile elements of their program" (p. 228). In addition, "there is a need for broad use of existing statements of institutional goals and objectives to select materials and assess programs that would encourage the dialogues needed to clarify definitions, goals, and objectives in global education" (p. 228). While White (2016) deliberated about Brameld's thought of infusing into the higher education curriculum an awareness of global issues and remarked, "Brameldian thought argues that education's cultural role was to reconstruct society, specifically toward greater global unity and planetary cohesion for humankind" (p. 278). White further stated: "…that indeed to acculturate a global citizenry into similar habits of mind, action and practice will require a plurality of discipline and processes liberating the value of all individuals within all cultures" (p. 285).

"Global perspectives in agriculture are critical to the safety of food and agricultural resources, trades and consumers globally, yet very few opportunities exist for their study" (Ekir, Khaitsa, & Kabasa, 2013, p. 74). The authors postulated that "…an increasing interdependence among the nations of the world poses important challenges for today's scientists and policymakers" (p. 74). Thus, a study was conducted "..to enhance the international content of college curricula to promote globalization of research and education with the intent of providing a globally engaged workforce of scientists" (p. 74). Findings revealed that, despite some shortcomings, internationalizing the curricula in the area of infectious diseases management was advantageous as reflected by the feedbacks by those participated in the program (pp. 80-81).

The continued evolution of educational establishments based on societal and cultural changes, such as global agricultural literacy, would require working to change the curriculum that can be accomplished incrementally within the existing academic structure (Powell, Agnew & Trexler, 2008). Multiple approaches can be used to adjust and adopt the curriculum to effectively deliver agricultural literacy content in different teaching methods (Powell et al.).

Benefits and Barriers to Educational Globalization

Today, more than ever before, land-grant universities play significant roles in forging international bilateral partnerships, with the faculty becoming actively involved in research and teaching collaborations. The advancement in technology allows for easier communication and exchange of ideas relative to mutually implemented projects. Faculty members who have more exposure in the global arena are more likely to infuse global perspectives into the curriculum.

This section of the review of literature focuses on the benefits and barriers of faculty infusion of global perspectives into the curriculum. Hand, Ricketts, and Bruening (2007) studied the benefits and barriers in faculty international professional development, and noted that "…faculty members who themselves participate in international exchanges are much more likely to incorporate similar experience into their curriculum" (p. 148). Some of the barriers include "…the cost or resources required for program participation as well as fear or uncertainty of the unknown situation" (p. 152). Similarly, Sammons and Martin (1997) conducted a study at ISU-CALS about the perceptions of college students on a curriculum with global perspectives and posited that internationalizing the curriculum in agricultural

colleges is important to make ready the students with living in the 21st century. However, they found significant barriers to international involvement, which included funding sources, non-continuance of the academic work, and the need for information about opportunities. Both studies, which are ten years apart, had identified funding cost as a barrier in the infusion of global perspectives.

Andreasen (2003) described the barriers to international involvement and divided them based on whether they are internal and external. Example of the external barriers were: "…lack of administration support, tenure track position, lack of time, financial constraints, conflict with classes, lack of opportunity, leaving current research, international work not conducive with raising a family, and lack of financial stability" (p. 67). The internal barriers included "…fear of different culture, ethnic prejudices, cultural biases, lack of desire, not being able to communicate, fear of political unrest, sense of American superiority, fear of lost opportunities, fear of appearing articulate, and, introverted personality" (p. 67). The identified barriers conformed to prior literature particularly the lack of support mechanism from administration. Andreasen (2003), however, was able to put forth some suggestions on how to cope up with these barriers. For example, he suggested that administrators must reduce or eliminate external barriers in order make sure that there are qualified and skillful professionals who are willing and able to carry the mission of the institution to other countries. The results of these assertions reinforce assumptions that there are, indeed, obstacles in the involvement of faculty in international program activities.

In a study on developing international research partnerships, Harder, Wingenbach, and Rosser (2007) remarked that "…the advancement of many technologies now allows researchers in different countries to communicate in ways that are changing how business,

education, and research are conducted" (p. 78). The signing of overseas partnership is especially important in places that are close to territorial borders like south Texas and northeastern Mexico (Harder et al.). While globalizing education is considered important, assertions were also made regarding the limited involvement of faculty in fulfilling their mandate to collaborate and expand their horizons outside their own school (Harder et al.).

Etling and McGirr (2005) wrote about the issues and procedures for forging international university partnerships. Assumptions were made based on the existence of a need to nullify the present trial-and-error styles that often lead to stationary and unsustain collaborations. They perceived there is a need to develop vibrant institutional cooperation that will be profitable for all institutions and individuals who are directly involved. Some of the practical tips suggested were: choose partners carefully, develop capability statement, identify areas of common interest, build upon personal relationships, and market your success and accomplishments so they are not forgotten (Etling & McGirr).

In a study by Harder, Wingenbach, and Rosser (2007) found the most important challenge in involvement in international collaboration is communication. Nevertheless, the issue of communication must not discourage the faculty members from participating in different overseas projects because it has been proven that a lot can be acquired in getting involved in international projects both on professional and personal levels (Harder et al.).

According to the National Association of State Universities and Land Grant Colleges (2004):

> At its core, internationalization is the critical means whereby the quality of our academic learning, discovery, and engagement can be enhanced, broadened, and enlivened. When we integrate international perspectives, experience, and discovery into our institutions, it expands our capacity to address the challenges of the new century and the needs of the world. It

> enables us to better serve our students, our communities, our nation and the academy. (p. 4)

As global education and global citizenship are becoming inevitable in a globalized community, Meidema and Bertram-Troost (2015) analyzed the challenges of global citizenship in the context of worldview education. Their findings suggested to help students see how the world can be shaped locally and globally with a strong concern on the uniqueness of every person and humanity, in general, and on a global scale and make them sensitive to the political and social, that is, intercultural, transcultural, inter-religious components of these processes and practices. In a study on community college globalization, Earp (2014) indicated the increasing sophistication technologies and the lowering of economic, geographic and cultural barriers has been a boundless workforce, which has brought globalization to the forefront of higher education. Thus, global forces are creating an impact on what universities and colleges must provide for students in order to be successful in this interconnected world. Nevertheless, even with growing movement in globalization by community colleges, faculty members are often unfamiliar with the concept about global thinking or how it potentially connects to their specific areas of teaching (Earp). It should be noted that some faculty members may be aware of how to infuse or include global topics in their curriculum.

In order to provide a model for infusion of global perspectives, Conte and Cavaliere (1982) argued that "…in global education, the goals and themes rely mostly on the issues of values, on self-discovery, and on looking on to the future of planning" (p. 76). They also noted that "…the paradigm developed by the staff of the Institute for the 21st century utilizes

three major education modes for infusion of global perspectives into existing curricula and instructional strategies: process, content and philosophy" (p. 76).

In a study of student perspectives on the infusion of multicultural issues in curricula, Anderson, MacPhee and Govan (2000) noted that "…former students reported that addressing multicultural issues in courses had a long-term impact on knowledge, attitudes, and professional skills" (p. 37). The authors concluded:

> …the effective infusion of diversity issues is a two-way process: instructors maybe trained and willing to infuse multicultural issues in their course work; however, students' perceptions of that experience need to be considered otherwise, faculty's noblest intentions may have little enduring impact. (pp. 54-55)

Findings of a study by Fugate and Jefferson (2001) indicated the need to re-structure the traditional partnerships among governments, accreditation institutions, business schools and local business. With the emerging new global economy, the combination characteristics of global education will be same as in the past if the re-structuring is not implemented (Fugate & Jefferson). Regarding reflective practice in global education, Merryfield (1993) stated, "…in order to prepare teachers for the diffuse, complex, and controversial nature of global education, teacher educators need to plan reflective exercises as part of their instruction" (p. 31). In addition, "…teachers and teacher educators benefit from ongoing reflection on the evolution of their conceptualizations of global education and on experiences in applying such ideas to their own instruction" (p. 31).

While conducting a case study on an infusion approach to internationalization, Skidmore, Marston and Olson (2005) found that "…the success of an infusion approach to internationalization depends upon strong top-down support from administrators and broad-based bottom-up support from faculty, staff and students from across the campus" (p. 200).

Like any academic program involving infusion issues into the curriculum, the support of administrators is necessary otherwise, such could not be institutionalized must more become a policy in the department and college levels.

Bao and Ferrara (2009) said that "…globalization has resulted in the call for greater diversity and multiculturalism in higher education" (p. 1). While land-grant universities in the U.S. are in position to implement a globalized curriculum in agriculture, private universities currently are also integrating in their mission statement the need for students to be responsible global citizens (Bao &Ferrara). Relative to the study of extension in land-grant international activities that connects knowledge and overseas development, Collins (2012) noted the need to transform economies and key institutions so that the universities can influence the countries around the world; however, this change is more evident in developed countries because they possess advancement of science and technology. Similarly, a nation should be allowed to develop the capacity to come up with local and global response that will make the under-developed nations join in the global knowledge economy.

Schoorman (2000) posited: "…if internationalization efforts are to be sustained as an integral part of the educational process, it is crucial that educators – especially those committed to such process – have a definite vision of the rationale, goals and implementation strategies desired" (p. 5). Such a strategy could include curricular efforts in internationalization to center around issues of contents that will show "…a view of internationalization as ongoing emphasizes the need to build on current efforts to create new opportunities for global awareness" (p. 7).

Educators need to commit to the process of globalization. Coorts (1987) wrote about his views regarding the need to update the curriculum for the agriculture of tomorrow, and

noted, "…college curricula must be dynamic and constantly modified in order to graduate students who are at the "cutting edge" of knowledge and technology … faculty must be encouraged and rewarded for reviewing and upgrading their courses" (p. 20). Moreover, Coorts challenged "…for agriculture faculty of today is to continue to modify curricula in order to provide the very best education for students to meet our society's agricultural employment needs now and in the future" (p. 21). Schoorman and Coorts both agree on the crucial roles that the educators play in the process of global education.

When making a case study of the advantages of an overseas agriculture field-base course, Bruening and Frick (2004a) suggested that "…students need opportunities to understand culture, improve language skills, learn about international markets, and possess a contextual awareness of international communities" (p. 89). Moreover, they added, "…professors need to understand the context of agriculture within other countries and how international colleagues view the dynamic interrelationships between science, the economy, and the workforce" (p. 90).

Irani, Place, and Friedel (2006) did a study about the attitudes, beliefs, views and challenges in involvement in international programs among the students of College of Agriculture and Life Sciences. It was noted that "…many of our students come from small town s and rural areas where opportunities for international acculturation experiences are very limited, a fact that may need to be considered by institutions when planning international program experiences" (p. 36). Thus, the intentions regarding their participation in international activities may be affected by various perceptual variables, not the least of which is cost (Irani et al.).

Acker (1999) studied the constraints and opportunities in improving the standards of global higher agricultural education, and noted:

> Challenges discussed are the lack of global cooperation, the limited frame of reference associated with educational nationalism, underutilized sources of knowledge, the need for globalization of educational content, gender imbalances among students and faculty members, narrow disciplinary approaches used in organizing learning, and the narrow definition of scholarship and its impact on recognition systems at institutions engaged in higher education in agriculture. (p. 47)

Moreover, regarding opportunities to improve the quality of higher education in agriculture, Acker added, "…advances in communication technology coupled with rebirth of global cooperation make it possible to achieve significant advances in higher education in agriculture" (p. 47).

In a paper on the perception of employers in the preparation of agricultural and extension students who recently graduated, Graham (2001) noted that "…preparing graduates to work in a highly competitive global market is the major motivator for the fast forming partnerships between higher education and business and industry" (p. 3). Based on this result, many agricultural colleges are undertaking innovations in their programs and re-examining the philosophy of their institutional missions and some of the notable improvements are in the curricular and extra-curricular options in order to increase the technical competencies of agriculture graduates in the global market (Graham).

Based on findings of a survey of the present status, barriers and implementation of internationalization of animal science undergraduate curriculum, Forsberg, Taur and Chesbrough (2003) asserted, "…although, administrators strongly believed internationalization had value, implementation was limited" (p. 1088). The authors identified that "…barriers included finances and limited commitment from higher administration" (p.

1088). They concluded that, in order to determine the merits internationalization, departments should evaluate their undergraduate curriculum (Forsberg, et al.).

The debate on whether to internationalize the curriculum or not is no longer an issue but the important question is how to include or infuse global or international perspectives into the curriculum. The relevance and providing priority to internationalization are still not observed in other colleges of agriculture. Navarro and Edwards (2008) in their study on the inclusion of internationalized curriculum in colleges of agriculture in the two universities revealed that, "increasing international awareness ranked last priority; however, internationalization of the curriculum was viewed as very relevant" (p. 72).

In a paper entitled, *A plan for internationalizing agricultural education in the United States of America,* Martin (1987) stated:

> The need for developing an awareness of the global nature of the agricultural industry has become one of the major issues of our time. It has become increasingly apparent that if a person is to be considered educated in agriculture, he/she must be cognizant of the inter-relationships of various agricultural systems and the governments, cultures and societies in which they function. It is no longer sufficient to know how to produce food, fiber, and conduct or manage the many tasks in today's agricultural industry. Development and enhancement of one nation's agricultural system is unavoidably inter-woven with those of other nations. If these developments and inter-relationships are to be successful, it is critical that students of agriculture learn as much as possible about systems of agriculture in cultures and societies around the world. (pp. 4-5)

Bonanno (1992) noted that the internationalization of the agricultural college program, then, becomes a key instrument both to development awareness of the global nature of agriculture as well as overcome the lack of knowledge of other cultures and agricultural systems. In this respect, the internationalization of curricula is identified in terms of the introduction of activities, which open students, faculty members and administrators to

different world realities, and the interrelated character of the new global era. It may be concluded that "…the international dimension of agriculture needs to be fully integrated into course offerings and into the broader array of activities constituting the various aspects of post-secondary education" (p. 23).

Bruening and Frick (2004a) did a study about the assessment of chosen courses meant to infuse international perspectives into the curriculum in the College of Agriculture at MSU. It was suggested: "…colleges of agriculture need to find ways to integrate international curriculum models that will provide students with broad based international experiences so that they are prepared to meet the challenges of global society" (pp. 23-24).

Wingenbach et al. (2003) researched student knowledge and attitudes about international agricultural issues, and posited, "…given the rapidity of communicating global events and their possible effects to food distribution and consumption worldwide, one of the goals for an undergraduate program should be to teach students about international agricultural issues" (p. 34).

McKenna (1991) reiterated the addition of an international option in the undergraduate curriculum, attesting that "…with the increasing emphasis on the global nature of environmental concerns, markets and economies, a global component becomes a necessity in a curriculum" (p. 14). The emphasis in attaining a successful globalization of the curriculum lies on the faculty (p. 17). In spite of their important role, "…faculty members frequently think that there is insufficient time and staff to include more international content in the curriculum" (p. 17).

In the study about transforming the curriculum by Navarro (2009), it was indicated that, "for decades, under the pressure of changing social, economic, cultural, technological,

and globalization forces, and in the effort of adapting to their environment, universities have often revisited and changed their education, outreach, and research agendas" (p. 15). In addition, " particularly intense has been the debate among higher education scholar regarding the ideal purpose, content, format, methods, process, learner roles, rigor, and learning requirements of the curriculum" (p. 15). While it was acknowledged that there is no one single solution to the transforming the curriculum for the students to acquire appreciation of global issues, it was nonetheless suggested that teaching topics related to hunger are useful tools in the context of teaching and learning processes (p. 18).

Motivation for Globalization

It is important to understand the motivation of faculty members in infusing global perspectives into the curriculum. A humanistic view on motivation indicates that, out of each behavior is a direct link to a hidden source of motivation. It emphasizes the person's striving to be "…competent, effective, creative and imaginative" (Arkes & Garske, 1977, p. 87). Thus, when abiding to institutional policy statement that encourages faculty members to strive to enhance global engagement, it is imperative to acquire competence, effectiveness, and be creative and imaginative regarding use of a variety of mechanisms that may include infusion of global perspectives inside the classroom. In the time of increasing conflict and chaos worldwide, the significance of obtaining international perspectives by the students should increase.

Jones (1985) identified three of the most important sources of initial motivation for participating in international agricultural development of faculty a university: (a) the desire to obtain a larger view and higher appreciation of other people and cultures; (b) it is important

and interesting work; and (3) it provides an opportunity to expand one's experience. Jones also recommended that policymakers should consider donor agencies and universities who are interested in international development work. There is a need to reward, recognize and even encourage the new mentors to participate in international program work. The personal characteristics of mentors who are currently taking part in international development work should be compared with the personal characteristics that is being developed by mentors who are becoming interested in overseas development activities. Mentors with broad experience in overseas work should be considered as experts in the field of international development, which would qualify them to guide and assist other mentors striving to establish a reputation in the international program work. Faculty interested in international development activities must be kept informed of departmental and college-level involvement in development work. These people should be considered as valuable resource in the formulation of university strategies toward development work. Some developing country experience appear to breed a desire for more involvement. Strategies leading to involving interested faculty in short-term assignments may well lead to more involvement by that faculty (Jones).

Weiner (1985) argued that, to answer the question of why people behave as they do, psychologists studying motivation assert or presume that there are one or more basic principles of behavior, such as people strive to fulfill their potential or people strive to satisfy their aggressive urges. A study of the basic approaches of motivation can be experimental as well as clinical. The former attempts to develop mathematical models that account for limited aspects of behavior, while the later posits psychological axioms that are pertinent to a diverse range of action. However, even within these stratagems, the theories that have been

developed differ in the phenomena that they examine. Thus, conception of motivation, typically, is not commensurate and cannot be judged as "better" than the others can.

Collings, Doherty, Luethy, and Osborn (2011) suggested for a re-framing of professional support for international trainees to reflect the importance the experience. They suggested that future research on the impact of overseas work on professional development should utilize appropriate methodologies. This may include longitudinal studies to monitor career development trajectories and the acquired experiences. In addition, it is crucial to undertake inter-personal and cross-cultural training to participants prior to deployment in foreign assignments. The training would help them develop the capacity to be competent in making decisions relative to the successful performance of their assigned duties in the international fieldwork. Supervisors are aware of some requirements that competency and skills development trainings are now required in many in many institutions.

Brinkerhoff (2005) remarked that where your energy goes is what you become. For many of us, there is a fine line between professional life and personal life. Your professional life is the expression of your being. To be dedicated in the life of international public service does not mean that it is all you are, or all that you do. It is also not just a question of happiness, although that is important. If all you do is pursue your service career, you will not likely be able to sustain your motivation and passion. You are likely to burn out or, to some degree, become less and less effective. We touch upon challenges and choices regarding life partners and families. As a faculty, consider how you can balance your personal and professional life in a way that can contribute to your happiness and sustained motivation.

According to Theall (1999), the challenge with motivation is that we cannot see nor touch it. Such characteristics is called hypothetical construct in the field of social sciences, a

meaning that was brought up to give descriptions to this kind of behavior. Since it cannot be seen nor touch, it would be hard to measure it. There is a need to observe intently and look for signs like persistence and satisfaction. There is a need for careful inference on the actions of each individual. Motivation can result in attaining rewards. It is goes without saying that with proper motivation, individuals who lack the desire and drive to pursue interests in a particular area can lead to fulfillment and satisfaction. Continued motivation can promote success and self-esteem that could elevate in the attainment of higher needs. Familiarity or monotony can cause the disappearance of a dream or a passion.

One motivation or reason Ockerman (1990) noted regarding internationalizing the food industry curriculum is because the food industry is rapidly turning global. A survey conducted during that time revealed that "…the top fifty food companies in the United States would suggest that they are already global in nature or rapidly moving more in that direction" (p. 14). With this anticipation, findings of the study suggested "…curriculum of university students specializing in the food area should be internationalized" (p. 14).

Along this line in the same era, McKenna (1989) had already recommended globalizing of courses to increase the scope of a curriculum. McKenna suggested that "…with the increasing emphasis on the global nature of markets and economy, a survey course with a global perspective can accomplish both goals: that of introducing an international component into the curriculum and providing a popular service course for others in the college community with global interests" (p. 8). This approach was also found to "…provide an excellent vehicle to use the expertise of faculty with international experience and international graduate students in a positive way" (p. 10).

A Reconstructivist Approach to Globalization

Doolittle and Camp (1999) posited that: "…the underlying tenet of constructivism, and the main thread that holds together this array of theoretical positions, is the claim that learners are active in their construction of knowledge and meaning" (p. 10). The construction of knowledge and meaning is in sequence or continuing because "…constructivism is not a unitary theoretical position; rather, it is frequently described as a continuum" (p. 6).

Students have the ability to become active learners to create or construct their own knowledge. In a study of complex constructivism, Doolittle (2014) noted:

> This combination of learner autonomy and holistic perspective has thrust constructivism to the forefront of learning science and education. Learner autonomy is the concept that learners are active participants in the learning process and ultimately responsible for their own learning. This holistic perspective is a non-reductionist approach that emphasizes learning in context. (p. 486).

The infusion of global perspectives into the curriculum allows the students to analyze issues affecting other countries. The interaction that occurs in class with fellow students and the professor can confirm or change their outlook on specific situations regarding a particular topic. Fosnot (1989) noted that "…meaningful learning occurs through reflection and resolution of cognitive conflict and thus serves to negate earlier, incomplete levels of understanding" (p.20).

According to Gray (1997):

> Constructivism is a view of learning based on the belief that knowledge is not a thing that can be simply given by the teacher at the front of the room to students in their desks. Rather, learners through an active, mental process of development construct knowledge; learners are the builders and creators of meaning and knowledge. A productive, constructivist classroom, then, consists of learner-centered, active instruction. In such a classroom, the teacher provides students with experiences that allow them to hypothesize,

> predict, manipulate objects, pose questions, research, investigate, imagine, and invent. The teacher's role is to facilitate this process. (p. 7)

Estepp and Roberts (2011) studied a model of transforming the undergraduate learning experience in colleges of agriculture and indicated that "…the hands-on, experientially driven pedagogical methods inherent in secondary agricultural education provide a constructivist/experiential learning model for undergraduate education" (p. 1). They further suggested that "…perhaps, colleges of agriculture should consider implementing the constructivist based, experiential pedagogical model presented to help transform the undergraduate learning experience" (p. 1).

Dubinsky and McDonald (2001) posited that "…an object is constructed from a process when individual becomes aware of the process as a totality and realizes that transformations can act on it" (p. 276). Thus, I watch such transformations occur as my students practice what I have taught.

According to Williams (2006):

> …beliefs about constructivist teaching include: a) learning is a social activity, b) active, hands-on experiences allow students to construct meaning, c) timely, thoughtful feedback is essential to student learning, and d) a variety of assessment strategies allow students to demonstrate what they know and what they can do" (p. 1).

The identification of these teaching beliefs were the results a study by Williams examined constructivist-teaching strategies employed in a distance degree program at a university in Western United States. With the growing popularity of online learning, the evolution of constructivism is currently practiced, even in distance degree programs.

Schcolnik, Kol, and Abarbanel (2006) claimed that "…constructivism implies the construction of knowledge, and it is our claim that construction requires more time than

instruction" (p. 14). They opined the two main approaches to constructivism are cognitive constructivism and social constructivism (p. 13). Liu and Ju (2010) posited that "…constructivism is a theory about how we learn and the thinking process, rather than about how a student can memorize and recite a quantity of information" (p. 65).

The philosophy of reconstructionism as applied to global education as asserted by White (2016) was used as a foundation for the current study. The university is the domain to introduce change through the curriculum to improve the awareness and preparedness of the students in their eventual role in a global society.

Faculty Role in Surveys

One of the roles of faculty members in education is to guide and assist the students to be successful in the completion of their studies. Faculty members follow lessons and topics in the curriculum so that the students acquire the needed knowledge and skills prior to graduation. Students fulfilling an academic requirement that entails the participation of faculty members like taking part in a survey study must be considered as providing guidance and assistance to the students. Umbach and Wawrzynski (2005) indicated that "…faculty members may play the single-most important role in student learning" (p. 176).

According to Krager (1985), the interaction among faculty members and students is important in higher education, which also has an obligation to society. This interaction is a form of personalization that encourages greater assistance and guidance to the students. Faculty members can influence the student learning experiences outside and inside of the classroom. The behavior and attitudes of teachers deeply influence the students because they are important integral components of undergraduate learning. Universities and colleges must

look for new avenues to encourage and reward teachers who are faithfully fulfilling their teaching assignments (Umbach & Wawrzynski, 2005).

It has been noted that given the voluntary nature of survey conducted by students, there are substantial number of prospective faculty respondents who do not participate. This occurs despite following procedures such as notifications, personalization, and altruistic appeal (Dillman, 2000). Moreover, response from an online survey can be enhanced by providing incentives. (Dommeyer, Baum, Hanna & Chapman, 2004). A survey was used to gather demographic information about the participants as well as inferential data for statistical analysis (see Appendix C).

Theoretical Framework

The cognitive approach to behavior espoused by Deci (1975) is a model used to understand the motivation of faculty to infuse global perspectives into the curriculum. The stimulus input is in the prelude of a cognitive behavior. According to Deci, sources of stimulus inputs can be external stimuli, memory or internal states (see Figure 1). Once awareness of potential satisfaction kicks in, the model indicate a next move, which is the stipulation of goals. From here, each activity or behavior is geared or directed towards the attainment of the goal, which would eventually result in the attainment of reward (tangible or intangible) or satisfaction. The internally motivated behaviors of faculty members are performed due to the interest in that particular activity to somehow satisfy an internal need for competence and independence. On the other hand, the execution of extrinsically motivated behaviors can vary in the extent to which self-determination can be represented

(Maslow, 1970). The processes of integration and internalization allow extrinsically motivated behaviors be more self-determined (Deci & Ryan, 1985).

While the study looked at the faculty perceptions, such perceptions are governed by motivation. The humanistic theory of motivation was another theoretical framework used in this study. From each individual behavior, the humanistic perspective on motivation claims that there is always a direct source of motivation (Arkes & Garske, 1982). In an article about the expressive component of behavior, Maslow (1949) indicated that: "…coping behavior always has among its determinants drives, needs, goals, purposes, functions, or aim" (p. 262).

Maslow has performed seminal work in the study of humanistic theory. In a paper entitled: *A Theory of Human Motivation,* Maslow (1943) reiterated the basic physiological

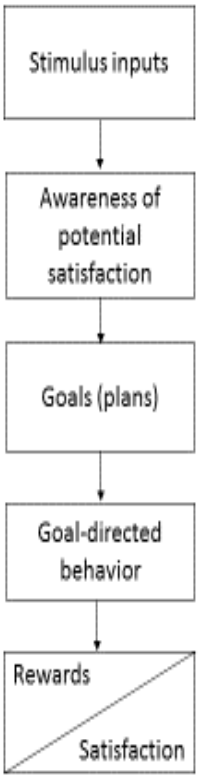

Figure 1. Cognitive approach to behavior (Deci, 1975)

needs as a starting point of motivation. The physiological needs (food, shelter, and warmth) are considered at the base of his hierarchy of needs pyramid (see Figure 2). These needs have been considered as the most basic and pre-potent physiological necessities for existence as human being. The next level in the pyramid is the safety need. Maslow (1943) stated that, "…if the physiological needs are relatively well gratified, there then emerges a new set of needs, which we may categorize roughly as the safety needs" (p. 376). The next level is the belonging – love need which state that, "…if both the physiological and the safety needs are fairly well gratified, then there will emerge the love and affection and belongingness needs, and the whole cycle already described will repeat itself with this new center" (pp. 380-381).

Figure 2. Hierarchy of needs (Maslow, 1943).

Stemming up after the achievement of these first three levels is the self-esteem needs, which is "…a need or desire for a stable firmly based (usually) high evaluation of themselves, for self-respect, or self-esteem, and for the esteem of others" (p. 381). At the apex of the hierarchy of needs pyramid of Maslow is need for self-actualization claiming

that “even all the needs are satisfied, we may still often (if not always) expect that a new discontent and restlessness will soon develop, unless the individual is doing what he is fitted for” (p. 382).

Maslow (1970) acknowledged that “…most members of our society who are normal are partially satisfied in all their basic needs and partially unsatisfied in all their basic needs at the same time” (pp. 53-54). In addition, “…a more realistic description of the hierarchy would be in terms of decreasing percentages of satisfaction as we go up the hierarchy of prepotency” (p. 54). It was determined that “…for the concept of emergence of a need after satisfaction of the pre-potent need, this emergence is not a sudden, salutatory phenomenon, but rather a gradual emergence by slow degrees from nothingness” (p. 54). Once at the level of self-actualization, it must be pointed out that “…at this level individual differences are greatest” (p. 46). Taken together in one context, “…the clear emergence of these needs usually rests upon some prior satisfaction of the physiological, safety, love, and esteem needs” (p. 47).

In writing about Maslow's hierarchy of needs, Merriam and Caffarella (1999) stated that “…at the lowest level of the hierarchy are physiological needs such as hunger and thirst, which must be attended to before one can deal with safety needs – those dealing with security, and protection” (p. 257). They added that “…the remaining levels are belonging and love, self-esteem, and, finally, the need for self-actualization” (p. 257).

Wilson and Madsen (2008) stated that, “Abraham Maslow refused to believe that behavior was predetermined by the environment or subconscious, but he believed it was the consequence of human choices” (p. 49), and added that “…people are inherently good, are free to act, and possess unlimited potential for learning, growth, and development” (p. 49).

They further stated: "…individuals have the freedom and responsibility to become what they are capable of becoming and are, therefore, responsible for learning" (p. 49). Action fulfills needs. In reference to educational implications of the humanistic psychologies, Maslow (1968) reiterated:

> Using peak-experiences or fascination or wonder experiences as an intrinsic reward or goal at many points in education is a very real possibility, and is congruent with the whole philosophy of the humanistic educator. At the very least, this new knowledge can help wean teachers away from their frequent uneasiness with and even disapproval and persecution of these experiences. If they learn to value them as great moments in the learning process, moments in which both cognitive and personal growth take place simultaneously, then this valuing can be transmitted to the child. (p. 694)

Merriam, Caffarella and Baumgartner (2007) noted: "…for Maslow self-actualization is the goal of learning, and educators should strive to bring this about" … "Maslow considered the founder of humanistic psychology, proposed a theory of human motivation based on hierarchy of needs" (p. 282).

Reconstructionism is another theoretical framework where this study is grounded. Brameld (1904-1987) propagated reconstructionism in educational global philosophy. In a study of reconstructionism, White (2016) asserted: "Theodore Brameld's Reconstructionist thought can provide us in American higher education the philosophical foundation for a relevant 21st century curriculum global studies agenda" (p. 278). White added that:

> Through the intersection of Brameldian social Reconstructionism into a forum of global studies into that of the Arts and Letters for American higher education, learners gain an infusion of emerging collective consciousness that weaves together new ways of knowing through the formation of the curriculum that informs rational thought and empirical action of global social behavior that ultimately cultivates a new normal for humankind. (p. 278)

Social reconstructionists believe that, in order to achieve positive global changes and cooperation, the call for action occurs in the corridor of education. It holds that education is

the appropriate institution in society to initiate change due of its widespread and comprehensive effect (White, 2016). Educators with reconstructionist philosophy focus on academic plans that highlights social reform as an objective in providing education.

Curricula are focused on student experiences and should reflect what many social reconstructionist and critical theorists argue about taking action within the realm of educational institutions to implement global change that promotes understanding, cooperation and mutual respect in areas like politics, culture, traditions, beliefs and society as a whole. With the breakthroughs in communication and transportation technologies, our world is more interwoven and more closely-knit that ever before.

Conceptual Base

The enumerated conceptual base of this study presents in broader scope the ideas or concepts adhered to as well as some principles that are considered important in achieving the purpose of this research. The following statements were made to provide a conceptual base for this study:

1. The faculty respondents have various perceptions on the implications of the infusion of global perspectives into the curriculum and its relationship to the over-all teaching learning process.
2. The CALS faculty members have diverse experiences in the global arena that could reveal a dynamic approach to the infusion of global perspectives into the curriculum which is different from other faculty members.
3. The faculty perspectives on the infusion of global perspectives into the curriculum maybe affected by several factors that include: (a) the organization or department

where they belong, (b) individual motivation/stimulus, and (c) the clientele they serve.

4. The participation of faculty in the infusion of global perspectives into the curriculum can be affected by the strategies within the academic program, the organizational set-up and the institution as a whole.
5. The allotment of funding to support the infusion of global perspectives into the curriculum remains crucial and should be an integral part of the institution's strategic plan.
6. The activities used to infuse international perspectives and the opinions on curriculum can be diverse and complex but with one common goal and that is preparing the students in the global job market.
7. The perceptions of the faculty members on the internationalization of the curriculum relative to the topics to be taught and other perception statements are not entirely different from 25 years ago because they remain important and relevant.

Research Questions

This study was a follow-up to update the findings of a dissertation research conducted by King (1991). Therefore, the research questions asked in the current study were taken verbatim from King's original study to provide a basis for an analysis:

1. To what extent are faculty members in the College of Agriculture and Life Sciences at Iowa State University aware of the need for internationalizing the curriculum?

2. To what extent do faculty members in the College of Agriculture and Life Sciences at Iowa State University perceive that courses in the College of Agriculture should be internationalized?
3. What subject matter/content areas of agriculture are critical for providing students of agriculture with a global perspective?
4. What activities are currently being conducted in the College of Agriculture and Life Sciences to add a global perspective to the curriculum?
5. What other procedures or activities need to be completed in order to provide a global perspective in the College of Agriculture and Life Sciences curriculum at Iowa State University?
6. What are the comparative demographic and occupational information of faculty members in the College of Agriculture and Life Sciences at Iowa State University?

Summary

This chapter provided an in-depth discussion of related literature divided into seven sections, which include: functional views of global education; benefits and barriers to educational globalization; motivation to globalization; a reconstructivist approach to globalization; faculty role in survey; theoretical framework; conceptual base; and research questions.

Reconstructivism is one of several philosophical approaches to consider in globalizing curriculum. Faculty members have the option to use different ways to rationalize the globalization of their curriculums.

Chapter 3 will discuss the methods and procedures utilized to carry out the study. It includes the research design, use of comparative methods, survey instrument, basic assumptions, limitations and delimitations, data collection, data analysis and ethical considerations.

CHAPTER 3. METHODS AND PROCEDURES

The main purpose of this study was to make a comparative assessment and analysis of the perceptions of the faculty members of Iowa State University – College of Agriculture and Life Sciences (ISU – CALS) regarding the infusion of a global perspective into the agriculture curriculum between the year 1991 and year 2016. The study was also aimed at identifying activities presently used by faculty members to infuse global perspective to the courses that they teach.

Research Design

This descriptive study used a questionnaire to survey the perception of faculty members of the College of Agriculture and Life Sciences (CALS) at Iowa State University on the infusion of global perspectives into their curriculum. All CALS faculty members were sent the survey material and are considered potential respondents. The data gathered in the current study were compared to the data generated by Don Robert King who did a similar perception study of CALS faculty members in 1991.

The following research questions framed the study and provided a basis for an analysis. They were taken verbatim from the original research conducted by King (1991) for use as a basis of comparison of a situation at a given point in time

1. To what extent are faculty members in the College of Agriculture at Iowa State University aware of the need for internationalizing the curriculum?
2. To what extent do faculty members in the College of Agriculture at Iowa State University perceive that courses in the College of Agriculture should be internationalized?

3. What subject matter/content areas of agriculture are critical for providing students of agriculture with a global perspective?
4. What activities are currently being conducted in the College of Agriculture to add a global perspective to the curriculum?
5. What other procedures or activities need to be completed in order to provide a global perspective in the College of Agriculture curriculum at Iowa State University?

Use of Comparative Methodology

The conduct of a comparative study would allow for the showing connections and differences (Coley, 2000). Comparative studies have been conducted for over 2,000 years now (Deutsch, 1987). Their usefulness is still relevant and functional in order to recommend changes to the existing norms. In the case of the current research, a comparison becomes meaningful because data were analyzed from two different time points. Thus, while examining the data, the differences become the focus and the goal is to reveal the underlying causes that allow for such a variation in the perception of the faculty members about the infusion of global perspectives into the curriculum. Hantrais (1995) conducted numerous comparative studies, and noted that comparative research methods help to identify, analyze, and explain similarities and differences. Comparative research can be used to explain if shared phenomena are produced by the same causes. (Hantrais, 1995). Thus, it was hoped that this comparative method of study may enable us to better understand the causes for the changes that occur during two time periods, and provide for suggestions for adaption of processes directly linking to the differences that were observed.

Survey Instrument

The survey instrument used by King (1991) was modified for this study. The use of this survey instrument would allow for a comparative assessment of data generated 25 years ago to the data collected in 2016. Part A enumerates the perception statements regarding the internationalization of the curriculum. The survey instrument used by King had 26 statements. After careful assessment, Part A was divided into three sections, with a total of 16 perception statements. Part B of the survey material contains the critical content/topics to be taught from global perspectives. The 48 critical/topics used by King were also utilized in the Part B of this study. Part C was comprised of listings of activities currently used to add a global perspective. Three questions were asked in this section of the instrument. Part D inquired about the opinions of participants about the infusion of global perspectives into the curriculum, which was based on Part E of King's instrument. The same eight opinion questions were asked of the respondents. Part E solicited demographic information of the respondents, and contained five questions in the current study. Modifications were made with the primary intent of making a meaningful comparison while avoiding possible survey fatigue among the respondents.

The instrument underwent a thorough scrutiny by the major professor and the Survey Research Service (SRS), with staff members from the Center for Survey Statistics and Methodology (CSSM), and the Institute for Social and Behavioral Research (ISBR). This provided confidence in the validity and reliability of the instrument, thus minimizing internal validity threats.

Dillman (2000) suggested the use of e-mail surveys because they have the edge of immediately being returned, they receive more complete responses to open-ended questions,

they can be finished at the convenience of the respondents, and they usually do not get lost like postal mail surveys. In addition, Wyse (2012) indicated that "…nowadays, many researchers are using online surveys because they are easy to develop especially when using advanced survey software solutions available" (para. 1). In addition, "…advanced online survey software solutions have multi-mode capabilities for online surveys giving researchers the ability to survey even the hardest-to-reach consumers and analyze data collectively in a cost effective manner" (Wyse, 2012, para. 3).

The instrument was sent to all members of the faculty members of the College of Agriculture and Life Sciences via Qualtrics survey software. The university has a subscription to this software that allows faculty, staff and students to conduct survey and other similar studies with the use of university user ID and password. Qualtrics software is widely used and recommended as it enables subscribers to do many kinds of user-friendly online data collection and analysis. The survey was initially sent in early fall semester of 2016 and a follow-up reminder was sent nine days afterward. A final reminder was sent 14 days after the second reminder.

Careful and restricted generalization of results can be observed for studies with low response rate (Navarro, 2004). However, recent studies suggest that"…the effect of non-response may not be as pronounced as was once thought and that low response rates may not necessarily indicate bias" (McCarty, 2003, p. 405). Teitler, Reichman, and Sprachman (2003) investigated on how to increase the responses of hard to reach population relative the cost and benefits of the survey. They concluded that "…efforts to improve response rate were beneficial in obtaining a representative sample before there was a point of diminishing returns beyond which the benefits were marginal" (p. 136). In addition, "…the findings from

these studies do not justify low response rates; there is no question that high response rates are preferable than lower ones but was simply indicated that low response rates do not necessarily translate into biased data" (pp. 136-137).

Assumptions

Several assumptions were made prior to conducting the study:

1. The respondents are capable of identifying and rating concepts and principles that are needed in infusing global perspectives into the curriculum.
2. Accurate, objective and unbiased responses would be provided by the respondents in each of the parts of the survey instrument.
3. A need exists to make a comparative assessment on the infusion of global perspectives into the curriculum at the collegiate level.
4. The responses considered represent actual perceptions during the time of the study.

Limitations and Delimitations

The primary delimitation of the study was that the data collection and analysis were performed in collaboration with CALS departments during a specific timeframe. The study was conducted in light of the following limitations and delimitations:

1. This study examined the perceptions of only the faculty members of the College of Agriculture and Life Sciences at Iowa State University.
2. The comparative assessment of the perceptions of ISU – CALS faculty members about the infusion of global perspectives into the curriculum was completed in two time periods.

3. An assessment of the perceptions and not the competence of the faculty members was done.
4. The assessment was considered to be relevant during the period of the study.
5. Changes in the perceptions of the respondents in the future may declare different assessment results.
6. A discussion of results was based on the responses of the survey participants.
7. Statistical tools used in the study were suggested by a social science statistician to minimize errors and maximize statistical power.

Data Collection

This study used a descriptive survey method in the form of an online questionnaire that was sent to the respondents to ascertain their perceptions of the infusion of global perspectives into the curriculum. Prior to conducting the study, approval was sought from the ISU Institutional Review Board (IRB) for exemption from the requirements of the human subject protection regulations and granted. A copy of the approval memo is provided in Appendix A.

The ISU Office of Institutional Research was requested to provide the official university e-mail addresses of the all the 324 faculty members of the College of Agriculture and Life Sciences. The survey instrument (Appendix B) was sent to all faculty members with a letter of introduction and a request to participate. Sixty-five faculty provided useful responses to the survey, indicating a 20% response rate. The survey was first sent in the early fall semester of 2016, and a follow-up reminder was sent after nine days. A final reminder was sent 14 days after the second reminder.

Data Analysis

Data collected from the survey were downloaded into Excel spreadsheets. The data were analyzed using inferential and descriptive methods. The descriptive analysis included standard deviations, percentages, frequencies and means. The inferential procedures used were Chi-square, *t*-tests, ANOVA and Pearson coefficient for comparison between the data collected from the respondents in 1991 and 2016. Chi-square was used in making a comparative analysis of the 1991 and 2016 data of the 16 tables that cover a description of the respondents, activities currently used to add international perspectives into the curriculum, and opinions on curriculum. The data on perceptions regarding internationalization of curriculum and the critical content/topics to be taught from a global perspective were analyzed using *t*-tests. In order to ascertain the differences between the various levels of independent variables, the data were subjected to a one-way analysis of variance (ANOVA) testing with 0.05 as the alpha level. The means of the perception statements and the critical content/topics were compared to the variables age, rank, race and department affiliations using ANOVA. Pearson's coefficient was used to determine the correlation between the 1991 and 2016 data on age, academic rank and number of years of teaching experience with the variables perception statements on internationalization and critical content/topics to be taught. The software program Statistical Package for Social Sciences (SPSS) was used for computer analysis of the data. The assistance of a social science statistician was sought to interpret, verify, and analyze the data that were gathered in the study.

According to Ary et al. (2010), inferential statistics are "…procedures that enable one to make tentative generalizations from sample data to the population from which the sample

data was taken (p. 643). King (1991) used ANOVA to ascertain perception statements and critical content/topics mean scores when grouped by the variables: age, academic rank, race, and department affiliation. In order to provide a meaningful comparison of the 1991 and 2016 data for these areas, the same inferential statistics were used and presented consecutively in this study. The individual ANOVA table represent a generalization of a specific variable (age, academic rank, race, or department affiliation) at a specific year. The ANOVA tables for each year of study were compared to determine whether they have: (a) the same significant results; the same non-significant differences; or (c) if one is significant and the other is not significant. The ANOVA comparisons made for the purpose of this study were between the *p*-values for each year represented in each table. In general, this study was descriptive in nature, and used the elements of both qualitative research in discussing the opinions of the respondents and quantitative research (inferential) using Chi-square, t-tests, ANOVA, and Pearson's coefficient in analyzing the data.

Ethical Considerations

Data collection was conducted in an ethical manner to protect the identity of the participants. All information collected and reported has had all identifying information removed to create complete anonymity for participants in each method of data collection and analysis. The Institutional Review Board (IRB) in the Office granted a formal application and successful award of an exemption for Responsible Research at Iowa State University. A copy of the IRB approval is provided in Appendix A.

Summary

This chapter introduced the methods and procedures that were used in this study. An explanation was made on the following: research design, use of comparative methods, survey instrument, basic assumptions, limitations and delimitations, data collection, data analysis and ethical considerations. The results and discussion are provided in the next chapter.

CHAPTER 4. RESULTS AND DISCUSSION

The primary purpose of this study was to make a comparative assessment of the perceptions of the faculty members at the College of Agriculture and Life Sciences regarding the infusion of global perspectives into the curriculum. This chapter includes data gathered and provides a discussion of the results of statistical analyses. The chapter is divided into the following sections: (a) Reliability; (b) Description of Respondents; (c) Activities Currently Used to Add an International Perspectives into the Curriculum; (d) Opinions on Curriculum; (e) Perceptions Regarding Internationalization of Curriculum; (f) Content or Concepts Areas to be Taught from a Global Perspective; (g) Comparison of Perception and Topic Variables by Demographic Data; (h) ANOVA Discussion; (i) Faculty Opinions for Encouraging Internationalization; (j) Theoretical and Conceptual Implications; (k) Implications for Practice in Education; and (l) Summary.

Reliability

Cronbach's alpha (α) was used to determine the level of consistency and stability of the survey instrument. The sections on perception statements and critical content/topics to be taught from global a perspective were individually computed, the alpha coefficient for each item was 0.763 and 0.997, respectively. This indicated that the reliability scale had high

Table 1. Reliability testing for the instrument

Instrument section	Number of Items	Cronbach's alpha coefficient
Perception statements	16	0.763
Critical content/topics	48	0.997
Total	64	0.975

internal consistency. The reliability coefficient for the 64 total items was 0.975. A reliability coefficient of 0.70 and higher is generally accepted in social science research. (Ary, 2010)

Description of the Respondents

This section provides descriptions of selected demographic and occupational information about the respondents that include: gender, age, academic rank, primary workload, identified race, years of teaching experiences and department affiliation. This will address the research question on the demographic and occupational information about the faculty members in the College of Agriculture and Life Sciences. Each demographic and occupational information data for 1991 and 2016 was entered into a tabular form and subjected to Chi-square testing to compare the percentage results. Chi square is useful to test for equality of proportions between two groups or independence between two variables which in the case of this study are the years 1991 and 2016. An alpha level 0.05 was used to compare the degree of significance. A total of 65 faculty members gave useful responses in the survey, for a 20% percent response rate. Two follow-up e-mails were sent as reminders. While it was not one of the objectives to the study to compare and analyze the differences in the response rate of the previous and the current survey, nevertheless, it can be deduced or speculated that a more personalized survey seems to obtain higher response rate.

Table 2 provides a comparison of the gender of the respondents. The gender of the respondents in the current study was 74% (*n*=46) and 26% (*n*=16) for the male and female respondents, respectively. The study from 25 years ago had 90% (*n*=138) male and 10% *(n*=16) female respondents. The increase in 16 percentage points in the number of female faculty members reflects ISU's policy of enhancing efforts to recruit, train and retain diverse

employees. The increase in the number of female faculty members also reflects the access and opportunity for individuals to make ISU as a workplace regardless of gender. This is also

Table 2. Comparative gender of the respondents

Gender	Year		χ^2	p
	1991	2016		
Male	90% (138)	74% (46)	8.32*	0.004
Female	10% (16)	26% (16)		

*Statistically significant at $p \leq 0.005$.

indicative of an advancement in gender equality in the workplace as advocated by some societies or groups. Statistical analysis shows significant differences on gender employment between the two years in comparison.

Table 3 provides a comparison of the age of the respondents. In the 1991 study, the age bracket of 41-50 years old had the highest number of respondents at 29.4% (n=45), while the current study received more responses from faculty members who were over 60 years old at 36.0% (n=18). Older faculty members seemed more inclined participating in online surveys compared to the younger ones. The trend from 25 years ago favored receiving more responses from younger faculty members while the current study revealed a corresponding increase in participation in the survey with an increase in age in the faculty members. This may be an indication that older faculty members have obtained more international experiences that they are willing to share, thus, taking part in the survey. The comparison revealed statistical differences in the participation of faculty members based on age regarding the two years that were compared.

Table 3. Comparative age of the respondents

Age (years)	Year		χ^2	*p*
	1991	2016		
Under 30	4.60 % (7)	4.0% (2)	16.51*	0.002
31-40	26.1 % (40)	8.0% (4)		
41-50	29.4 % (45)	20.0% (10)		
51-60	25.5 % (39)	32.0% (16)		
Over 60	14.4% (22)	36.0% (18)		

*Statistically significant at p≤0.005.

Table 4 provides the comparative academic ranks of the respondents. It was observed that professors were more inclined to participate as respondents for the two years being compared. Faculty members with an academic rank of professor were 57.8% (*n*=89) and 56.5% (*n*=35) of the respondents for 1991 and 2016, respectively. It might be assumed that professors have broader international experience that enabled them to contribute greater insight and they became interested in participating in the survey. Similar with the data on the participation of faculty by age, the current study revealed an increased level of participation

Table 4. Comparative academic rank of the respondents

Academic Rank	Year		χ^2	*p*
	1991	2016		
Professor	57.8 % (89)	56.5% (35)	6.49	0.165
Associate Professor	14.3 % (22)	16.1% (10)		
Assistant Professor	17.5 % (27)	14.5% (9)		
Instructor/Lecturer	7.1 % (11)	12.9% (8)		
Others	2.6% (4)	0% (0)		

with an increase in level of academic rank. Moreover, no significant differences were observed between the academic ranks of the respondents and the two years being compared.

Table 5 illustrates the comparative primary workload of the respondents. The faculty members in the current study have more combined tasks of teaching, research, extension and administration accounting for 61.5% (*n*=32) of the respondents. This is an indication of the faculty members' willingness to accept a position at Iowa State University with multiple workload responsibilities. This can be observed even in currently posted faculty position vacancies within the College of Agriculture and Life Sciences that seek applicants to perform

Table 5. Comparative primary workload of the respondents

Primary Workload	Year		χ^2	*p*
	1991	2016		
Teaching	24.2 % (36)	1.9% (1)	56.06*	<0.001
Research	41.6 % (62)	17.3% (9)		
Extension	4.0 % (6)	19.2% (10)		
Administration	10.7 % (16)	0% (0)		
Combination/Others	32.1% (29)	61.5% (32)		

*Statistically significant at p≤0.01.

a combination of tasks in the tripartite functions of teaching, research and extension at the university. Interestingly, full-time faculty researchers in 1991 accounted for 41.6% (*n*=62) of the respondents as compared to only 17.3% (*n*=9) in 2016. Statistical analysis revealed significant differences in the primary workload of the respondents in the two years that were compared. The multiple assignments in the different functions of the university could also be due to a greater desire for involvement in various scholarships that can facilitate sourcing for extramural and intramural funding for research, teaching or extension projects.

In addition, faculty members at Iowa State University might enjoy what is called, Faculty Modified Duties Assignment (FMDA). Tenure-eligible and tenured faculty members can reconfigure faculty duties as specified in the Position Responsibility Statement (PRS), faculty responsibilities remain at 100 percent efforts but the effort level in the areas of responsibilities such as research, professional service or outreach are re-balanced to provide greater flexibility to the faculty members.

Table 6 illustrates the comparative identified race of the respondents. There was a slight increase in the racial diversity of the respondents in 2016, with 88.9% (*n*=48) white and 11.1% (*n*=11) non-white. In 1991, white and non-white faculty respondents were at 91.4% (*n*=138) and 8.6% (n=13), respectively. No statistical differences were observed on

Table 6. Comparative identified race of the respondents

Race	Year		χ^2	*p*
	1991	2016		
White	91.4% (138)	88.9% (48)	0.296	0.586
Black, Hispanic, Asian	8.6% (13)	11.1% (6)		

the identified race of the respondents in the two years of the study. The increase in racial diversity can, in part, be due to the creation of the Talent Acquisition Unit within the University Human Resources Department that assists the university in attracting the best-qualified and diverse applicants who can broaden scholarships and prepare students to be productive members of society. The proactive promotion and enhancement of diversity at Iowa State University is taken seriously by finding ways to improve the university environment for all through diversity initiatives and programs (Leath, 2016).

Table 7 illustrates the comparative years of teaching experience of the respondents. While the 1991 study showed a relative fair distribution of years of teaching experiences among the respondents, the present study had the highest percentage of respondents from those with 5–10 of years teaching experience at 27.5% (*n*=14). The 1991 study had the highest number of respondents from those with less than 5 years teaching experience at

Table 7. Comparative years of teaching of the respondents

Years of Teaching	Year		χ^2	*p*
	1991	2016		
None	3.3 % (5)	0% (0)	15.09	0.057
Under 5	22.4 % (34)	11.8% (6)		
5-10	19.1 % (29)	27.5% (14)		
11-15	13.2 % (20)	5.9% (3)		
16-20	15.8% (24)	19.6% (10)		
21-25	9.6 % (15)	13.7 % (7)		
26-30	8.6 % (13)	2.0 % (1)		
31-35	2.0 % (3)	5.9 % (3)		
35 or more	5.9% (9)	13.7% (7)		

22.4% (*n*=34). However, statistical analysis revealed no significant differences in the years of teaching of the faculty participants in the two years being compared in the study.

Table 8 illustrates the department affiliation of the respondents in the years 1991 and 2016. The number of faculty respondents from the Departments of Plant Pathology and Microbiology in 1991 was combined due to the fusing of the two departments. The Department of Genetics/Zoology was renamed Department of Genetics, Development and

Cell Biology. The Department of Forestry became the Department of Natural Resource Ecology and Management.

From the distribution of faculty respondents across various departments, no statistical differences were observed as to the percentages of responses in the two years being compared. The study received comparable responses from among the faculty members.

Table 8. Comparative department affiliations of the respondents

Department Affiliation	Year		χ^2	p
	1991	2016		
Ag Edu and Studies	6.4% (10)	11.3% (7)	14.93	0.245
Ag and Bios Eng	4.7% (7)	11.3% (7)		
Agronomy	17.3 % (26)	17.7% (11)		
Animal Science	10.7 % (16)	17.7% (11)		
Bioch, Bioph & M Bio	4% (6)	3.2% (2)		
Economics	19.3 % (29)	11.3 % (7)		
Eco, Evol & Organ Bio	6.7% (10)	1.6 % (1)		
Entomology	4.7 % (7)	1.6 % (1)		
Food Sci & Human Nut	4.0 % (6)	4.8% (3)		
Gene, Dev & Cell Bio	3.3% (5)	0% (0)		
Horticulture	4.0% (6)	8.1% (5)		
Nat Res Ecolo & Mgt	2.7 % (4)	3.2 % (2)		
Plant Path & Microbio	8.0% (12)	4.8 % (3)		
Sociology	4.0 % (6)	3.2 % (2)		

Activities used to Infuse an International Perspective in the Curriculum

This section explains the various activities that the faculty members in the College of Agriculture and Life Sciences are using to add international perspective in their curriculum. This section includes the following three subsections: (1) students' activities used by respondents to add global perspectives to their courses; (2) topics discussed inside the classes of the respondents that add a global perspective to the curriculum; and (3) reasons of the respondents for infusing a global perspective to the curriculum. This will address the research questions on activities and other procedures currently being conducted in the College of Agriculture and Life Sciences to add a global perspective to the curriculum. The activities used to add international perspectives in their curriculum in each section were entered into a tabular form and compared with the 1991 data. A Chi-square test was used to compare the responses.

Student activities were grouped as: student and own experience; global perspectives to all topics; films, slides, video, etc.; case studies/research; compare/contrast systems; guest speakers; assigned readings; and, discussion/debate. The discussion topics included: world cultures and development; technical subject matter; political/economic topics; education/extension systems; global agricultural systems; environmental/ecological; agri-business/sales and marketing; and, trade and policy. The personal reasons of the faculty members for infusing global perspectives into their curriculum were grouped according to: personal interest; relationship between global economy and agriculture; integrate U.S. into global community; necessary for understanding agriculture; student interest; pertinent to course subject matter; and, student development.

Table 9 reveals the comparative student activities used by the respondents in order to infuse global perspectives into the curriculum. In the 1991 study, the use of discussion/debate activities revealed a percentage of 24.6% (*n*=62) while the 2016 study had both 11.3% (*n*=7) for discussion/debate and case studies/research activities. One activity to provide global experience for students was short-term travel abroad. Student and their own experience activities had 6.0% (*n*=16) and 8.1% (*n*=5) for 1991 and 2016, respectively. Wingenbach et al. (2006) recommended more programs must be offered for students to acquire cross-cultural training experience and contest their conventional thinking that will not allow them

Table 9. Comparative student activities of the respondents

Student Activities	Year		χ^2	p
	1991	2016		
Student and own experience	6.0% (16)	8.1% (5)	22.44*	0.004
Global Perspective to all topics	4.0% (11)	8.1% (5)		
Case Studies/Research	3.0% (8)	11.3% (7)		
Films, Slides, Videos, etc.	10% (25)	4.8% (3)		
Compare/Contrast Systems	5.0% (12)	3.2% (2)		
Guest Speakers	10.0% (25)	1.6% (1)		
Assigned Readings	6.0% (13)	3.2% (2)		
Discussion/Debate	24.6% (62)	11.3% (7)		
No Comments	27.2% (81)	48.4% (30)		

* Statistically significant at $p \leq 0.005$.

to take part in international program activities. Bruening and Frick (2004b) recommended the inclusion of international illustrations in the curriculum as one way of globalizing undergraduate experience together with short- and long-term travel and internship for students and broad range of international experience for professors.

The considerable interest in globalizing the curriculum necessitates colleges and universities to provide students with opportunities to study and travel abroad. (Crunkilton, McKenna, & White, 2003). There is no specific debate on the need and importance of incorporating some kind of international perspectives or experiences into the curriculum but the question is, rather, how does one include international experiences into the curriculum to make it meaningful and sustainable (Crunkilton et al.). Moreover, when considering transforming curriculum, Navarro (2009) recommended that educators address problems and criticisms by stakeholders who look at higher education curriculum as a means to shape the experiences of students to attain global mindsets by developing the ability to understand, apply, evaluate, and integrate the knowledge of multiple disciplines, and become socially responsible.

Table 10 provides the comparative responses of faculty members regarding the discussion topics that are infused into the curriculum. Global agricultural systems activities revealed 13.9% (*n*=36) in 1991 and 9.7% (*n*=6) in 2016. Meanwhile, in 2016, "…technical subject matter" received 14.5% (*n*=9) and 12.8% (*n*=33) in 1991. Statistical analysis revealed no significant differences on the comparative discussion topics of the respondents in the 1991 and 2016. This would indicate that the perceptions of the faculty members regarding the different discussion topics remained about the same with the "no comment" receiving 34.9% (*n*=90) and 43.5% (*n*=27) for 1991 and 2016, respectively.

The knowledge and skills acquired by the students during their courses of study regarding international agricultural issues is of paramount importance given the increased

Table 10. Comparative discussion topics of the respondents

Discussion Topics	Year		χ^2	p
	1991	2016		
World Cultures & Development	6.9% (18)	6.5% (4)	6.68	0.570
Technical Subject Matter	12.8% (33)	14.5% (9)		
Political/Economic Topics	8.5% (22)	3.2% (2)		
Education/Extension Systems	3.1% (8)	3.2% (2)		
Global Agric. Systems	13.9% (36)	9.7% (6)		
Environmental/Ecological	5.0% (13)	9.7% (6)		
Agr. Business: Sales/Mktg	6.6% (17)	3.2% (2)		
Trade and Policy	8.1% (21)	6.5% (4)		
No Comment	34.9% (90)	43.5% (27)		

requirement to attain the capacity to communicate worldwide events and their effects on global consumption and distribution of food (Wingenbach et al., 2003).

Table 11 provides a comparison of reasons the respondents gave for adding a global perspective for the infusion of global perspective into the College of Agriculture and Life Sciences curriculum. While the respondents identified the list of reasons for adding a global perspective into the curriculum, Hendrix (1998) posited that global education is committed to excellence in its role in both the academia and society. These assertions can be divided into two general categories: academic excellence (student, development, pertinent to course subject matter, necessary for understanding agriculture, relationship between global economy and agriculture); and social responsibility (integrate U.S. into global community, personal and student interest). To help students attain this commitment and responsibility, Coorts (1987) stated that the college curricula must be dynamic and constantly modified so that students are on the cutting edge of knowledge and technology. The role of faculty is also

Table 11. Comparative reasons for adding a global perspective

Reasons for adding a global perspective	Year		χ^2	p
	1991	2016		
Personal interest	9.3% (22)	4.8% (3)	12.92	0.074
Rel. bet. global economy and ag	4.6% (11)	6.5% (4)		
Integrate U.S. into global community	3.4% (8)	8.1% (5)		
Necessary for understanding agric.	7.2% (17)	9.7% (6)		
Student interest	2.1% (5)	6.5% (4)		
Pertinent to course sub. matter	11.4% (27)	6.5% (4)		
Student Development	19.4% (46)	8.1% (5)		
No Comment	42.6% (101)	50% (31)		

critical; thus, administrators have the task of encouraging and rewarding those faculty members who are regularly reviewing and upgrading their courses (Coorts, 1987).

Garii (2009) noted that "…teacher educators recognize that their own participation in study abroad programs translate into professional development opportunities for globalizing teacher education curricula and becoming more global minded" (p. 84). The addition of global perspectives into the undergraduate curriculum regardless of the stated reasons is an activity that can be done by faculty members to address emerging professional skills requirement. Adjustment or revising a curriculum is evolutionary and reflects the changes not the least of which is obtaining competencies on global issues (Wolf & Schaffner, 2000).

Student development as a reason for adding global perspective into the curriculum received 19.4% and 8.1% for 1991 and 2016, respectively. In a report on the likelihood of agriculture students to participate in international opportunities, Irani, Place, Lundy, and Friedel (2004) recommended that there should be an intensive educational effort to slowly

allow the students to be exposed in the international arena much early in their academic programs. Opportunities must be presented for students to be able to participate which may require an information campaign both inside the classrooms from the professors or from offices within the college that are responsible for international experiences like study abroad and internship scholarships. Moreover, some students have indicated conditions before participating in international activities. According to Sammons (1995), these should be included with no additional course required. The active inclusion of international content by faculty members should be part of all course content, and there should be provisions to assist students with study abroad costs.

Opinions on Curriculum

This section about the opinions regarding the department's curriculum includes the following six subsections: (1) problems with the curriculum in the departments of the respondents; (2) activities to improve the curriculum in the departments of the respondents; (3) conduct of department review; (4) availability of institutional documents; (5) importance of global issues; and (6) level of internationally related programs. This will help address the research question on the perception of faculty members in the College of Agriculture at Iowa State University on the internationalization of courses. Respondents' opinions regarding the department's curriculum were entered into a tabular form and compared with the 1991 data. Chi-square testing was used to compare the responses.

The reasons given by the respondents on the departmental curriculum problems were grouped as follows: there are no problems; student and faculty experiences needed; more focus on research; needs financial support; more application needed; lacks integration; more

rigor needed; and, narrow and restrictive. The activities for curriculum improvement identified by the respondents were grouped as follows: discuss and evaluate it; internationalize content; improve teaching/instruction; students and faculty experiences needed; more integration needed; increase financial support; add foreign language requirement; and, refocus/restructure it.

Table 12 provides the comparative reasons for department curriculum problems of the respondents. Approximately one fourth or 25.6% (*n*=37) of the respondents in the 1991 study and 10.7% (*n*=7) in 2016 study found the departmental curriculum as narrow and restrictive while 6.5% (*n*=9) and 8.6% (*n*=5) stated the lack of rigor in the same years. Most curriculums members have to prioritize content in order to accommodate infusion activities. It seems from the results of the survey that some respondents have been following a

Table 12. Comparative reasons for departmental curriculum problems

Department curriculum problems	Year		χ^2	*p*
	1991	2016		
There are no problems	3.5% (5)	1.1% (1)	19.52*	0.012
Stud. & Fac. Experiences Needed	12.5% (18)	12.9% (8)		
More Focus on Research	2.1% (3)	2.7% (2)		
Needs Financial Support	4.8% (7)	5.4% (3)		
More Application Needed	11.8% (17)	2.1% (1)		
Lacks Integration	6.5% (9)	8.6% (5)		
More Rigor Needed	7.6% (11)	5.4% (3)		
Narrow & Restrictive	25.6% (37)	10.7% (7)		
No Comment	25.6% (37)	51.0% (32)		

*Statistically significant at $p \leq 0.05$.

curriculum without established international contents. If infusion of global perspective is not imbedded in the curriculum, the challenge comes when faculty have to prioritize content to accommodate global content and others identified the lack of time or asked which content to prioritize. Addressing the curricular problems within each department is crucial. According to a study by Wingenbach et al. (2003), only 5% of post-secondary students who took a knowledge test regarding cultures, peoples, products and agricultural policies had achieved a passing score. Thus, to help students become global citizens and acquire broader knowledge about international issues, similar habits of mind, action, and practice are required to have a plurality in the discipline and understand the values practiced by individuals within all culture (White, 2016).

Table 13 illustrates the comparative activities for curriculum improvement of the respondents. Approximately one fifth or 18.4% (n=23) of the respondents in the 1991 study

Table 13. Comparative activities for curriculum improvement

Activities for Curriculum Improvement	Year		χ^2	p
	1991	2016		
Discuss and Evaluate it	8.0% (10)	3.2% (2)	22.19*	0.005
Internationalize Content	10.4% (13)	6.4% (4)		
Improve Teaching/Instruction	12.0% (15)	4.9% (3)		
Stud. & Fac. Experiences Needed	7.2% (9)	4.9% (3)		
More Integration Needed	8.0% (10)	4.9% (3)		
Increase Financial Support	7.2% (9)	6.4% (4)		
Add Foreign Lang. Requirement	2.4% (3)	4.9% (3)		
Refocus/Restructure It	18.4% (23)	6.4% (4)		
No Comment	26% (32)	58.1% (36)		

*Statistically significant at p≤0.005.

indicated the need to refocus/restructure the curriculum followed by the need to improve teaching/instruction at 12.0% (*n*=15). The current study revealed 6.4% in the following activities: refocus/restructure it, increase financial support, and internalize content. When subjected to statistical analysis, significant differences were noted on the responses of the faculty members regarding activities for curriculum improvement for the years 1991 and 2016. These results are indicative of differences in the mindsets or perceptions of the respondents regarding needed activities for curriculum improvement. It can be observed that both study years obtained relatively high "no comment" responses of 26.0% (*n*=32) and 58.1% (*n*=36) for 1991 and 2016, respectively.

Irani, Place, and Friedel (2006) stated that based on a study about the perception on the barriers, attitudes and beliefs in involvement international activities, student concerns about financial expenses and available time were the challenges seems to be the most limiting factors. These challenges can be solved through the conduct of activities that will not be expensive, provision of scholarships, and the celebration of festivals that show different cultures, which will encourage participation to international activity (Irani et al.). The activities to improve curriculum should focus on global understanding, knowledge and skills that employer truly would like to see (Irani et al.).

Bruening and Frick (2004) indicated the need for faculty members to acquire greater awareness of agricultural issues in other nations and create an avenue to collaborate with their colleagues in the international front. This way, the professors will gain firsthand knowledge and experience of global issues and know what they are talking about inside their classrooms (Acker & Scanes, 1998).

Table 14 provides the comparative responses on the conduct of a department review by the respondents. King (1991) revealed that 40% (*n*=56) of his respondents indicated no knowledge of whether their department conducted any type of review, planning, or study activity toward evaluating, strengthening, or increasing the international content or dimensions of departmental programs. Those who indicated that they had knowledge of review of department programs regarding international content or dimensions were approximately one fourth or 23.6% (*n*=33). Slightly more than one third or 36.4% (*n*=51) did not know about any review of department programs. Moreover, the current study revealed

Table 14. Comparative responses on the conduct of department review

Review of Department Programs	Year		χ^2	*p*
	1991	2016		
Yes	23.6% (33)	37.9% (22)	4.97	0.083
No	40.0% (56)	37.9% (22)		
Do not know	36.4% (51)	24.2% (14)		

that 37.9% (*n*=22) of the respondents as having knowledge of a type of review, planning, or study activity toward evaluating or strengthening the international contents of departmental programs.

Surprisingly, the 2016 study had an equal percentage of respondents at 37.9% (*n*=22) who stated that no review in the department level has been conducted. Approximately one fourth or 24.2% (*n*=14) of the respondents indicated that they did not know of any type of review, planning or study activity toward evaluating, strengthening or increasing the international content or dimensions of departmental programs. Statistical analysis indicated no significant differences on the perception of the faculty members regarding knowledge of

whether their department conducted any type of review, planning, or study activity toward evaluating, strengthening, or increasing the international content or dimensions of departmental programs in both the 1991 and 2016 studies.

The need to conduct regular internal and external review of departmental programs and activities that are attuned to the needs of the market and the desires of prospective employers is highly recommended. This is valuable in order to ensure students are competitive when they graduate, especially when facing challenges in jobs that require a global perspective (Larson 2000). Thus, efforts must be in place to communicate better to the faculty members the available information regarding department programs that increase or strengthen the international content or dimensions in the curriculum. There might be policies and programs in place within the department; however, the results of the studies revealed that a large percentage of the faculty members had no knowledge and/or did not know the presence of such a review, study, or planning activity regarding evaluating, increasing or strengthening the international content or dimensions of the curriculum.

A summary of the comparative response on the availability of institutional documents that indicate commitment to internationalization is provided in Table 15. Approximately one third or 32.8% (*n*=45) of the respondents in the 1991 study indicated that there were no institutional documents available to indicate commitment to internationalization compared to 28.8% (*n*=17) in the present study. Those who gave affirmation were 23.4% (*n*=32) and 37.3% (*n*=22) for 1991 and 2016, respectively. Interestingly, a higher percentage of the 1991 respondents or 43.85% (*n*=60) did not have knowledge of the availability of institutional documents that indicate support to internationalization while the present study revealed 33.9% (*n*=20).

Table 15. Comparative responses on the availability of institutional documents

Institutional Document	Year		χ^2	p
	1991	2016		
Yes	23.4% (32)	37.3% (22)	4.11	0.128
No	32.8% (45)	28.8% (17)		
Do not know	43.8% (60)	33.9% (20)		

Similarly, the results provided in Table 14 regarding knowledge of department reviews conducted to increase or strengthen the international content or dimensions of departmental programs revealed a need to better communicate the presence and availability of institutional documents that indicate commitment to internationalization by faculty members. The percentage of faculty members who stated no availability of institutional documents to indicate commitment to internationalization and/or do not know of any documents available revealing commitment to internationalization can be considered high in the two years that were compared. Statistical analysis showed no significant differences on the level of perception of the faculty members regarding availability of institutional documents that indicate commitment to internationalization in 1991 and 2016. A higher number of faculty members who would have indicated the availability of institutional document is more desirable. Generally, the faculty members indicated greater importance for the global issues, problems and/or opportunities at Iowa State University in the next ten to twenty years.

As shown in Table 16, 86.6% (n=123) and 78.0% (n=46) of the respondents answered "More Important" on the question of importance of global issues for 1991 and 2016, respectively. By indicating greater importance to understanding global issues would result in

the facilitation of the infusion of global perspective in the content of the curriculum in agricultural courses handled by faculty members. Statistical analysis shows no significant differences of perceptions of faculty members regarding the importance of global issues problems and/or opportunities at Iowa State University in the next ten to twenty years. Faculty members seem aware of the greater role they play in understanding world issues, as well as the problems and opportunities that exist to better perform their work as mentors at ISU. The importance of understanding global issues provide an advantage in the teaching of agriculture because faculty members can include the discussion of these global issues, problems and opportunities in the teaching of their courses (Acker & Scanes 1998).

Table 16. Comparative responses on the importance of global issues

Importance of Global Issues	Year		χ^2	p
	1991	2016		
More Important	86.6% (123)	78.0% (46)	3.41	0.181
Stay about the same	12.7% (18)	18.6% (11)		
Less Important	0.7% (1)	3.4% (2)		

Table 17 provides the comparative responses on the level of internationally related programs and activities at Iowa State University in the next ten to twenty years. The respondents when asked what they feel about the level of internationally related program and activities, nearly two thirds or 63.6% (n=91) of the respondents in 1991 stated that the level will increase slightly. It is interesting to note that the response on the level of internationally related programs and activities in the two years being compared are close to each other with 50.8% (n=30) in 2016. Those who said that it will increase greatly were 30.1% (n=43) and 35.6% (n=21) for 1991 and 2016, respectively. Only a small percentage indicated that it will

stay about the same with 4.9% (*n*=7) and 8.5 % (*n*=5) for 1991 and 2016, respectively. Statistical analysis shows no significant differences on the comparative responses on the level of internationally related programs and activities in the next 10 years. Iowa State University's involvement in international program and activities is considered crucial in fulfilling its mandate as a land-grant institution. Globalization, as mentioned by VanDerZanden and Iles (2013), has affected higher education institutions in the United States and this requires greater participation in the global arena through the implementation of successful programs to prepare the students to be global citizens. Forging international

Table 17. Comparative responses for level of internationally related programs and activities

Level of International Programs	Year		χ^2	*p*
	1991	2016		
Increase greatly	30.1% (43)	35.6% (21)	4.74	0.192
Increase slightly	63.6% (91)	50.8% (30)		
Stay about the same	4.9% (7)	8.5% (5)		
Do not know	1.4% (2)	5.1% (3)		

partnerships are critical in our globalization. The increased level of international program participation reflects the university's serious mission that includes the surrounding states and other communities around the world (Etling & McGirr, 2005).

Perceptions Regarding Internationalization of Curriculum

Part of the survey asked the respondents to respond to 16 perception statements regarding the infusion of global perspectives into the curriculum. This would primarily help address the research question on the need to internationalize the curriculum. Each respondent was requested to express their agreement with each statement based on a Likert-type scale of

1 to 5, with: 5 = Strongly agree; 4 = Somewhat agree; 3 = Neither agree nor disagree; 2 = Somewhat disagree; and 1 = Strongly disagree.

The table for the perception statements regarding the infusion of global perspective into the curriculum was analyzed using a two-sample *t*-test to compare the means of the respondents in the 1991 and 2016 studies. The *t*-test was applied to assess whether the mean scores of two groups are statistically different from each other. Significant *t*-test would show difference between two groups that unlikely to have happened because the sample are not the same or atypical. Determination of statistical significance can be based on the size difference among sample size, group means and standard deviations of the different groups.

Table 18 provides the means, standard deviations and number of respondents regarding the infusion of global perspectives into the curriculum in the College of Agriculture and Life Sciences at Iowa State University. Of the 16 identified perception statements regarding the infusion of global perspectives into the curriculum, the following four statements were found to be statistically different when analyzed using the *t*-test two-sample method on the two years that were compared:

a. The total college curriculum should reflect a respect for and knowledge of the global community;

b. Agriculturally diverse content is an important part of the curricula of the College of Agriculture;

c. The College of Agriculture and Life Sciences should vigorously encourage international internships for all undergraduate students; and

d. There is no need to continue effort in helping students develop a global perspective in agriculture; they'll get this elsewhere in the university.

Table 18. Means, standard deviations and number of perception statements regarding the infusion of global perspectives into the curriculum in the College of Agriculture and Life Sciences (CALS) at Iowa State University

Perception Statement	1991			2016			
	N	Mean	SD	N	Mean	SD	*p*-value
1. As citizens of the United States and of the world, Iowans have an obligation to improve their knowledge of other countries' agricultural systems.	155	4.15	0.96	62	3.95	1.22	0.13
2. The agriculture curricula should provide students with opportunity to develop an agricultural knowledge-base about the dynamics and inter-dependence of nations throughout the world.	155	4.41	0.65	62	4.50	0.80	0.22
3. Educators can enhance student development by helping them recognize the global nature of many issues and technologies that affect their lives and bind them to other nations and peoples	155	4.53	0.57	62	4.61	0.66	0.20
4. The total college curriculum should reflect a respect for and knowledge of the global community.	154	4.34	0.85	61	4.57	0.64	0.02*
5. Agriculturally diverse content is an important part of the curricula of the College of Agriculture.	153	3.99	0.88	61	4.30	0.94	0.01*
6. The citizens of Iowa should gain a greater awareness of the interdependence among nations.	155	4.39	0.62	58	4.43	0.92	0.38
7. Faculty can be helpful in the development of globally responsible personal and professional activities.	155	4.27	0.6	59	4.37	0.72	0.17
8. The College of Agriculture and Life Sciences should have a foreign language requirement.	154	2.73	1.32	59	2.76	1.43	0.44
9. The College of Agriculture and Life Sciences should vigorously encourage international internships for all undergraduate students.	152	2.68	1.18	59	3.31	1.29	0.00*
10. All faculty in the College of Agriculture and Life Sciences need to have a professional international experience.	153	2.73	1.2	59	2.97	1.41	0.13
12. Faculty need to have a background of international knowledge in order to help students develop attitudes and practices that will be more compatible on a global scale.	151	3.83	0.86	60	3.82	1.19	0.48
13. There is no need to continue effort in helping students develops a global perspective in agriculture; they'll get this elsewhere in the university.	152	1.84	0.71	60	1.62	0.78	0.03*
14. Global agricultural knowledge should be among the principal concerns of higher agricultural education in every country.	153	3.59	0.88	60	3.47	1.23	0.25
15. Increasing Iowans' awareness of the state's involvement in international agriculture is an important goal that should be integrated into the College of Agriculture and Life Sciences curricula.	153	3.97	0.83	60	3.97	1.06	0.50
16. As a whole the College of Agriculture and Life Sciences is supportive of the idea of integrating a global perspective into all agricultural courses.	151	3.51	0.84	58	3.66	1.18	0.19

*Statistically significant. Key: 5 = Strongly Agree, 4 = Somewhat Agree, 3 = Neither Agree nor Disagree, 2 = Somewhat Disagree, 1 = Strongly Disagree

In the 1991 study, the perception statement which received the highest respondent mean score (mean=4.53) was "Educators can enhance student development by helping them recognize the global nature of issues." The present study revealed the same highest mean respondent score (mean=4.61) among the identified perception statements.

Other perception statements that had mean scores above 4.0 in the current study were:

a. The total college curriculum should reflect a respect for and knowledge of the global community (mean=4.57);

b. The agriculture curricula should provide students with opportunity to develop an agricultural knowledge-base about the dynamics and inter-dependence of nations throughout the world (mean=4.50);

c. The citizens of Iowa should gain a greater awareness of the interdependence among nations (mean=4.43);

d. Faculty can be helpful in the development of globally responsible personal and professional activities (mean=4.37); and

e. Agriculturally diverse content is an important part of the curricula of the College of Agriculture and Life Sciences (mean=4.30).

In the current study, there were 10 perception statements that faculty members rated between somewhat agree to somewhat disagree. The perception statement, which received the lowest mean rating from respondents, was: "There is no need to continue effort in helping students develop a global perspective in agriculture; they'll get this elsewhere in the university" (mean=1.62). Other perception statement mean ratings, which were below 3.0 (neutral), were: "All faculty members in the College of Agriculture and Life Sciences need to have a professional experience" (mean=2.97), and "The College of Agriculture and Life Sciences should have a foreign language requirement" (mean=2.76).

From the data gathered, it can be deduced that the CALS faculty members, even after 25 years, had the same high perception ratings on: "Educators can enhance student

development by helping them recognize the global nature of issues" with means of 4.53 and 4.61 for the year 1991 and 2016, respectively. The role of faculty members in enhancing student development, especially on a global understanding of issues, is considered crucial in the globalization of the curriculum. Moreover, there is still a need to comment on the statement: "All faculty members in the College of Agriculture and Life Sciences need to have a professional international experience." This perception statement received a mean score of 2.73 and 2.97 for the year 1991 and 2016, respectively. While most faculty members were willing, able and ready to travel, others may opt to stay home for various reasons. Thus, the notion of everybody being required to have professional international experience may have deterred them.

Critical Content/Topics to be Taught

This section discusses the critical content or topics that were viewed by faculty members of the College of Agriculture and Life Sciences as important in the infusion of global perspectives into the curriculum. This will help address the research question on subject matter/content areas of agriculture that are critical in providing students of agriculture with a global perspective. The respondents were asked to respond using a 1 to 5 scale on 48 critical content or topics with: 5 = Extremely important; 4 = Very important; 3 = Moderately important; 2 = Slightly important and; 1 = Not at all important. Table 18 provides the means, standard deviations and number of responses on the critical content/topics to be taught at the College of Agriculture and Life Sciences. The mean scores on the critical content or topics of the respondents in 1991 were compared to the mean scores of the respondents in 2016 using a two-sample *t*-test. Table 19 provides the means, standard deviations and number of

respondents regarding the critical content/ topics to be taught from a global perspective in the College of Agriculture and Life Sciences at Iowa State University.

Of the 48 identified critical content/topics that could be taught from a global perspective in the College of Agriculture and Life Sciences, the following topics were found to be statistically different when analyzed using a *t*-test two-sample method on the two years that were compared:

a. Biotechnology
b. World marketing systems
c. Water management
d. Selected government's policy in agriculture
e. Political systems impact on agriculture
f. Trade policies
g. Imports and exports
h. Food processing
i. Relationship between art and agriculture
j. Bioethics

In the 1991 study, the topic statement which received the highest respondent mean rating was "environmental management practices" (mean=4.25). Other topic statements, which had means above 4.0, were:

a. Sustainable agriculture (mean=4.19)
b. International marketing systems (mean=4.14)
c. World food production practices (mean=4.09)
d. Political systems impact on agriculture(mean=4.03)
e. Water management (mean=4.02)

In the present study, the highest respondent mean rating for the topic statement was "water management" (mean=4.33). Other topic statements that had means above 4.0 were:

a. environmental management practices (mean=4.23)
b. sustainable agriculture (mean=4.10)

Table 19. Means, standard deviations and number of critical content areas/concepts taught from a global perspective in the College of Agriculture and Life Sciences (CALS) at Iowa State University

Critical Topics	1991			2016			*p*-value
	N	Mean	SD	N	Mean	SD	
1. Green Revolution	152	3.75	0.92	60	3.80	0.97	0.37
2. Sustainable Agriculture	150	4.19	0.74	60	4.10	0.92	0.25
3. Indigenous knowledge systems	148	3.75	0.88	60	3.68	1.02	0.32
4. Environmental management practices	152	4.25	0.72	60	4.23	0.79	0.43
5. International marketing systems	152	4.14	0.79	60	3.70	0.93	0.00
6. World food production practices	151	4.09	0.75	59	4.00	0.83	0.24
7. Biotechnology	151	3.37	0.98	60	3.88	0.90	0.00*
8. Cultural traditions and food production	152	3.97	0.85	60	3.77	0.96	0.08
9. Economic geography	151	3.97	0.84	60	3.87	0.83	0.22
10. World soil types	152	3.20	0.95	60	3.33	1.05	0.20
11. World agricultural systems	152	3.92	0.78	60	3.90	0.93	0.44
12. Farming systems research	151	3.50	0.84	60	3.70	0.91	0.07
13. World marketing systems	150	3.93	0.79	60	3.57	0.89	0.00*
14. Soil conservation practices	151	3.90	0.83	60	4.00	0.86	0.22
15. Water management	151	4.02	0.76	60	4.33	0.77	0.00*
16. Selected government's policy in agriculture	149	3.82	0.85	60	3.55	0.95	0.03*
17. World cropping systems	151	3.73	0.81	60	3.73	0.92	0.50
18. World livestock systems	151	3.74	0.81	60	3.77	0.91	0.41
19. Food policy in selected countries	151	3.71	0.86	59	3.53	0.95	0.10
20. Family farming in selected countries	150	3.38	0.89	60	3.38	1.06	0.50
21. Relationship between culture and decision making	149	3.76	0.96	60	3.78	0.99	0.45
22. Mechanization in selected countries	151	3.34	0.90	60	3.40	0.98	0.34
23. Pest control	151	3.62	0.85	60	3.65	0.90	0.41
24. Disease control	151	3.7	0.84	60	3.73	0.86	0.41

Table 19. (Continued).

Critical Topics	1991			2016			*p*-value
	N	Mean	SD	N	Mean	SD	
25. Political systems impact on agriculture	151	4.03	0.83	60	3.80	0.78	0.03*
26. Intensive agriculture practices	151	3.55	0.84	60	3.72	0.87	0.10
27. Government regulations	151	3.72	0.81	60	3.62	0.94	0.24
28. Subsidies	151	3.51	0.92	59	3.44	1.02	0.32
29. Labor availability	151	3.32	0.96	58	3.45	0.99	0.20
30. Land tenure systems	151	3.57	0.9	60	3.60	0.96	0.42
31. Monetary systems	151	3.41	0.91	58	3.17	1.05	0.06
32. Appropriate technology	150	3.95	0.8	58	3.86	0.89	0.25
33. Transfer of technology	151	3.87	0.88	58	3.84	0.93	0.42
34. Extension systems	151	3.64	0.93	58	3.64	1.10	0.50
35. Decision-making process and culture	151	3.78	0.95	58	3.79	1.07	0.48
36. Trade policies	151	3.89	0.91	58	3.60	0.92	0.02*
37. Product sales/marketing strategies	151	3.35	0.96	58	3.26	0.97	0.27
38. Imports and exports	151	3.75	0.88	58	3.47	1.01	0.03*
39. Labor intensive agriculture	152	3.46	0.85	57	3.42	1.00	0.39
40. Technology intensive agriculture	150	3.46	0.88	58	3.57	0.94	0.22
41. Food processing	151	3.58	0.83	59	3.34	0.96	0.05*
42. Relationship between art and agriculture	152	2.25	0.94	60	2.52	1.11	0.05*
43. Transportation systems	152	3.51	0.85	60	3.35	1.02	0.14
44. Communication systems	151	3.47	0.88	60	3.38	1.01	0.27
45. Foreign language	152	3.29	1.11	58	3.02	1.08	0.06
46. Storage for feed and food	152	3.53	0.93	60	3.47	1.03	0.35
47. Cultural awareness	152	3.78	0.94	59	3.71	1.03	0.33
48. Bioethics	151	3.40	1.12	60	3.77	1.03	0.01*

* Statistically significant. Key: 5 = Extremely important, 4 = Very Important, 3 = Moderately Important, 2 = Slightly Important, 1 = Not at All Important.

The faculty members considered all topic statements moderately to extremely important in 1991 and 2016 except “relationship between art and agriculture” which received the lowest mean score of 2.25 and 2.52, respectively. It is interesting to note the similar perceived importance of different topics or contents by faculty respondents in the two periods. The length of time has not been a crucial factor in the change of perception of the faculty respondents.

Demographic Results

This section determines the correlation between the demographic data (age, academic rank, number of years of teaching experience) with the variables perception statements on internationalization and critical content/topics to be taught. In order to determine if significant relationship existed, Pearson’s coefficient was used. Table 20 reveals the correlation between age of respondents, and perception statements and critical content/topics in 1991 and 2016. No significant correlation was observed on either the perception statements on the internationalization of the curriculum and the critical content/topics to be taught from global perspectives in the 1991 study. This test indicated that positive relationships between age the respondents and perception statements on the internationalization of the curriculum occurred only 11% of the time, while a positive relationship between the critical content/topics to be taught from global perspectives occurred only 8% of the time. Thus, the age of the respondents was neither a factor nor an influence in the perception statements on the internationalization of the curriculum and the critical content/topics that could be taught from global perspectives in the 1991 study. In

Table 20. Correlation between age of respondents and perception statements and critical content/topics in 1991 and 2016

Items	Age (1991)		Age (2016)	
	Correlation	Probability	Correlation	Probability
Perception statements on the internationalization of the curriculum	0.110	0.071	0.176	0.221
Critical content/topics to be taught from a global perspective	0.080	0.146	0.135	0.359

addition, there was no positive correlation between the perception statements on the internationalization of the curriculum and the critical content/topics to be taught from global perspectives in the 2016 study.

Results of correlation tests between academic rank of respondents and perception statements and critical content/topics in 1991 and 2016 are shown in Table 21. The academic ranks of the respondents did not show significant correlation on either the perception statements on the internationalization of the curriculum and the critical content/topics to be taught from global perspectives in the 1991 study. In addition, there was no observed positive correlation between the perception statements on the internationalization of the curriculum and the critical content/topics taught from global perspectives in the 2016 study. The results indicated that the academic rank of the respondents tended to have no significant impact on the perception statements on the internationalization of the curriculum and the critical content/topics taught from global perspectives in the two years that were compared.

Results of correlation tests between teaching experience of respondents, and perception statements on the internationalization of the curriculum and critical content/topics

Table 21. Correlation between academic rank of respondents and perception statements and critical content/topics in 1991 and 2016

Items	Academic rank (1991)		Academic rank (2016)	
	Correlation	Probability	Correlation	Probability
Perception statements on the internationalization of the curriculum	0.090	0.109	0.208	0.105
Critical content/topics to be taught from a global perspective	-0.020	0.392	-0.038	0.775

taught from global perspectives in 1991 and 2016 are show in Table 22. The years of teaching experience did not reveal a significant correlation on either the perception statements on the internationalization of the curriculum or the critical content/topics to be taught from global perspectives in the 1991 study. The result indicated that only 3% of the time a positive relationship existed between the years of teaching experience and the perception statements on the internationalization of the curriculum while there was virtually no positive correlation between years of teaching experience the critical content/topics to be taught from global perspectives. There was also no observed positive correlation between the perception statements on the internationalization of the curriculum and the critical content/topics taught from global perspectives in the 2016 study.

Table 22. Correlation between teaching experience of respondents, and perception statements and critical content/topics in 1991 and 2016

Items	Teaching experience (1991)		Teaching Experience (2016)	
	Correlation	Probability	Correlation	Probability
Perception statements on the internationalization of the curriculum	0.030	0.378	0.166	0.254
Critical content/topics to be taught from a global perspective	-0.020	0.392	-0.040	0.779

Inferential Statistics

Analysis of Variance (ANOVA) is a statistical method that is used to test the differences between two or more means. A comparison of means was made between the 1991 data generated by King and the 2016 data results of this study. ANOVA was performed on the means of perception statements and critical content/topics by the variables age, rank, race, and department affiliation in the present study. The 2016 ANOVA results on the identified global perception statement and the critical content/topics by the different identified variables were compared to the ANOVA of the 1991 study as to the level of statistical significance.

Age

Table 23 provides results of ANOVA for perception statement and critical topic/content means scores of the respondents in 1991 when grouped by age. The ages of the respondents were grouped by age: with Group 1 = under 40 years of age; Group 2 = 41–50 years of age; Group 3 = 51–60 years of age; and, Group 4 = over 60 years of age. Table 24 provides results of ANOVA of the same variables and groups for the 2016 respondents. Table 23 revealed no significant differences in the mean scores of 1991 respondents for the perception statements and critical content/topics for the different age groups. Table 24 revealed similarly no significant results were obtained on the mean scores of 2016 respondents for perception statements and critical content/topics for the different age groups. The results revealed that age did not play a role on the perceived importance of the different perception statements and the critical content/topics in both years of the study.

Academic rank

Table 25 provides results of ANOVA for perception statements and critical content/topic mean scores for 1991when grouped by academic rank. The respondents were grouped by rank, with: Group 1 = Assistant Professors; Group 2 = Associate Professors; Group 3 = Professors; and, Group 4 = Others. Table 26 provides results of ANOVA for the same variables and groups for the 2016 respondents. Table 25 revealed no significant differences on the mean scores of 1991 respondents for perception statements and critical content/topics for the different rank groups. Table 26 also revealed no significant results were obtained on the mean scores of 2016 respondents for perception statements and critical content/topics for the different age groups. These results indicated that regardless of the academic rank, the respondents had comparative mean scores for perceptions the statements and the content/topics identified in both the 1991 and in 2016 studies.

Race

Table 27 provides the results of ANOVA for perception statement and critical content/topic mean scores of the respondents in 1991 when grouped by the variable race. Races of the respondents were grouped as: Group 1 = White, and Group 2 = Black, Asian, Hispanic, Others. Table 28 illustrates the analysis of the same variables and groups for the 2016 respondents. Table 27 revealed significant differences on the mean scores of 1991 respondents for perception statement at $p<0.001$ level and a significant difference at $p<0.005$ for critical content/topics for the two race groups. The White respondents had relatively lower perception statements mean score of 3.64 (n=138) compared to the Group 2 with a mean score of 4.08 (n=13). A significant difference was also noted regarding the critical

Table 23. ANOVA for perception statement and critical content/topic mean scores when grouped by the variable age

Age (1991)														
Variable	Group 1			Group 2			Group 3			Group 4			*F* ratio	*F* prob
	N	Mean	SD	*N*	Mean	SD	*N*	Mean	SD	*N*	Mean	SD		
Perception statement	47	3.60	0.37	45	3.78	0.29	39	3.64	0.37	22	3.75	0.38	2.51	0.06
Critical content	47	3.66	0.45	45	3.51	0.58	38	3.68	0.43	22	3.78	0.65	1.49	0.22

Key: Group 1 = under 40 years of age; Group 2 = 41 – 50 years of age; Group 3 = 51 – 60 years of age; Group 4 = over 60 years of age

Table 24. ANOVA for perception statement and critical content/topic mean scores when grouped by the variable age

Age (2016)														
Variable	Group 1			Group 2			Group 3			Group 4			*F* ratio	*F* prob
	N	Mean	SD	*N*	Mean	SD	*N*	Mean	SD	*N*	Mean	SD		
Perception statement	6	3.09	0.92	10	3.81	0.75	16	3.72	0.87	18	3.68	0.78	1.09	0.36
Critical content	6	3.15	0.67	10	3.80	0.60	16	3.89	0.88	16	3.59	0.54	1.83	0.15

Key: Group 1 = under 40 years of age; Group 2 = 41 – 50 years of age; Group 3 = 51 – 60 years of age; Group 4 = over 60 years of age

Table 25. ANOVA for perception statement and critical content/topic mean scores when grouped by the variable academic rank in the 1991 study

Academic Rank														
Variable	Group 1			Group 2			Group 3			Group 4			*F* ratio	*F* Prob
	N	Mean	SD	*N*	Mean	SD	*N*	Mean	SD	*N*	Mean	SD		
Perception statement	27	3.66	0.37	22	3.54	0.41	89	3.71	0.33	15	3.73	0.40	1.38	0.25
Critical content	27	3.76	0.43	22	3.53	0.42	89	3.60	0.57	15	3.78	0.53	1.29	0.28

Key: Group 1 = Assistant Professor; Group 2 = Associate Professor; Group 3 = Professor; Group 4 = Other

Table 26. ANOVA for perception statement and critical content/topic mean scores when grouped by the variable academic rank in the 2016 study

Academic Rank														
Variable	Group 1			Group 2			Group 3			Group 4			*F* ratio	*F* prob
	N	Mean	SD	*N*	Mean	SD	*N*	Mean	SD	*N*	Mean	SD		
Perception statement	9	3.34	0.98	10	3.47	0.95	35	3.63	0.76	8	3.95	0.45	0.94	0.42
Critical content	9	3.56	0.79	10	3.74	0.91	33	3.59	0.68	8	3.70	0.38	0.17	0.91

Key: Group 1 = Assistant Professor; Group 2 = Associate Professor; Group 3 = Professor; Group 4 = Other

Table 27. ANOVA for perception statement and critical content/topic mean scores when grouped by the variable race in the 1991study

Race								
Variable	*N*	Group 1 Mean	SD	*N*	Group 2 Mean	SD	*F* ratio	*F* prob
Perception statement	138	3.64	0.35	13	4.08	0.16	19.40*	<0.000
Critical content	137	3.58	0.52	13	4.11	0.29	12.52*	0.005

Key: Group 1 = White, not Hispanic; Group 2 = Black, Asian, Hispanic, other
* Significantly different at $p<0.05$.

Table 28. ANOVA for perception statement and critical content/topic mean scores when grouped by the variable race in the 2016 study

Race								
Variable	*N*	Group 1 Mean	SD	*N*	Group 2 Mean	SD	*F* ratio	*F* prob
Perception statement	48	3.66	0.69	6	3.84	1.11	0.30	0.58
Critical content	48	3.62	0.66	6	3.88	0.98	0.70	0.40

Key: Group 1 = White, not Hispanic; Group 2 = Black, Asian, Hispanic, other

content/topics mean of the Group 2 respondents which is higher at 4.11 (n=13) compared to the white respondents with a mean of 3.58 (n=137).

On the other hand, Table 28 revealed no significant results were obtained on the mean scores of 2016 respondents for perception statement and critical content/topics for the two race groups. This notable change in the perception on the identified statements and content topics in the current study poses positive impact that race is not a factor in determining the level of importance of the two dependent variables.

Department affiliation

Table 29 provides the results of ANOVA for perception statement and critical content/topic mean scores for 1991 study when grouped by department affiliations. The departments were assigned into six groups: Group 1 = Agricultural Education and Studies; Ag and Bios Engineering; Economics; Sociology. Group 2 = Agronomy Group 3 = Animal Science; Ecology, Evolution and Organismal Biology. Group 4 = Biochemistry, Biophysics and Molecular Biology; Entomology; Genetics, Development and Cell Biology. Group 5 = Natural Resources, Ecology and Management; Horticulture. Group 6 = Food Science and Human Nutrition; Plant Path & Microbiology. Table 30 provides the ANOVA results for the same variable and group for the 2016 respondents. Table 29 revealed no significant differences on the mean scores of the 1991 respondents for perception statements and critical content/topics for the different department affiliation groups. For Table 30, similarly, there were no significant results obtained on the mean scores of 2016 respondents for perception statements and critical content/topics for the different department affiliation groups. The results revealed statistically comparative mean scores on perception statements and content/topics identified in both the 1991 and 2016 studies by faculty members across different departments. These results established that neither department affiliation nor the period of time that elapsed had an influence on the perception of the respondents on the level of importance of the identified statements and content/topics in the study. Additional figures of the distribution of the means are provided in Appendix D.

Table 29. ANOVA for perception statement and critical content/topic mean scores when grouped by variable department affiliation in the 1991 study

Department																				
Variable	Group 1			Group 2			Group 3			Group 4			Group 5			Group 6			*F* ratio	*F* prob
	N	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD		
Perception statement	52	3.68	0.36	26	3.71	0.39	27	3.65	0.36	17	3.77	0.28	10	3.56	0.27	18	3.68	0.40	0.50	0.77
Critical content	52	3.61	0.40	26	3.66	0.81	27	3.55	0.37	16	3.83	0.57	10	3.56	0.52	18	3.66	0.49	0.66	0.65

Key: Group 1 = Ag Edu and Studies; Ag and Bios Eng; Economics; Sociology; Group 2 = Agronomy; Group 3 = Animal Science; Eco, Evol & Organ Bio; Group 4 = Bioch, Bioph & M Bio; Entomology; Gene, Dev & Cell Bio; Group 4 = Bioch, Bioph & M Bio; Entomology; Gene, Dev & Cell Bio; Group 5 = Nat Res Ecolo & Mgt; Horticulture; Group 6 = Food Sci & Human Nut; Plant Path & Microbio

Table 30. ANOVA for perception statement and critical content/topic mean scores when grouped by variable department affiliation in the 2016 study

Department																				
Variable	Group 1			Group 2			Group 3			Group 4			Group 5			Group 6			*F* ratio	*F* prob
	N	Mean	SD	*N*	Mean	SD	*N*	Mean	SD	*N*	Mean	SD	*N*	Mean	SD	*N*	Mean	SD		
Perception statement	23	3.57	0.77	11	3.67	0.52	12	3.43	0.92	3	3.57	0.87	7	4.39	0.21	6	3.20	1.09	2.01	0.09
Critical content	22	3.67	0.71	11	3.66	0.62	11	3.28	0.71	3	3.60	0.59	7	4.08	0.47	6	3.47	0.88	1.23	0.31

Key: Group 1 = Ag Edu and Studies; Ag and Bios Eng; Economics; Sociology; Group 2 = Agronomy; Group 3 = Animal Science; Eco, Evol & Organ Bio; Group 4 = Bioch, Bioph & M Bio; Entomology; Gene, Dev & Cell Bio; Group 4 = Bioch, Bioph & M Bio; Entomology; Gene, Dev & Cell Bio; Group 5 = Nat Res Ecolo & Mgt; Horticulture; Group 6 = Food Sci & Human Nut; Plant Path & Microbio

Faculty Opinions for Encouraging Internationalization

The following are the responses on the questions asking for the respondents' own opinions about the importance urging the establishment and maintenance of higher commitment to the internationalization of different programs, activities and course offerings at Iowa State University. The responses in Table 31 were divided into five themes and these are:

a. *Globalization is imminent:* ISU's participation in the global arena is becoming more and more imminent in this day and age. It becomes highly relevant and desirable to globalize the curriculum to prepare the graduates for work in the global arena. Morey (2000) strongly argued the modification of curricula and teaching strategies to accommodate to the varying needs of learners to gain greater awareness, knowledge and skills to be beneficial part of the society where they live.

b. *Students need globalized view:* The students of ISU should have broader view and the understanding of the global society where they live. This will be of great advantage when they join the workforce that requires a broader understanding of the horizons of a global community. Davis, Evans and Reid (2005) stated that more than ever, both global education and citizenship education are getting more attention and support in curriculum development. In addition, students should be given the chance to understand other cultures, learn new language, and understand the world economy and a greater awareness of the global community (Bruening and Frick, 2004). Every person is a citizen in a global community and students must have a broader idea and experience of global education (Henrix, 1998).

c. *Global education requires innovations:* The curriculum should reflect the infusion of global perspectives. Other innovative approaches must address the need for students to gain greater awareness and understanding of the global community. Global citizenship in the context of worldview education allows the students to see how the world on a global scale and making them sensitive to the political and social issues (Meidema & Bertram-Troost, 2015).

d. *Funding to succeed is required:* There must be funds to support every globalization effort. The benefits in the investment for a successful global education are high. Thus, the support of college and university administrators are needed for any globalized education to succeed. Skidmore, Marston and Olson (2005) made a strong argument stating that the success of an infusion approach to internationalization depends upon strong top-down support from administrators.

e. *Global community emerges:* The partnership between international universities addresses the crucial role of emerging global communities. It is essential to build closer relationships with other institutions to pursue activities of common interest. Harder, Wingenbach and Rosser (2007) stated that with technological advancement, we can communicate faster and easily forge partnership. Partnerships among institution will benefit the individuals as well as the institutions because they share common interests (Etling & McGirr 2005).

Table 31. Faculty opinions regarding encouraging internationalization of the curriculum

N	Opinion
14	Global competitiveness for scarce resources Increasing global population Increasing economic power of that growing population Impact of climate change on agricultural and food systems
19	ISU is a world class university and as such it must be engaged globally in solving the complex problems of our time.
35	Investing in global programming is probably within Top 3 priorities for ISU to do in order to maintain (or improve) its US and international ranking. Maintaining status quo is not a viable option - global competition for students, expertise, and funding is fierce.
38	Our obligations and impact do not end at the Iowa or U.S. border.
43	We are no longer citizens of a state or country, but global citizens. What happens around the world impact everyone globally?
45	First, in regards to 4. Above, I'm hopeful our new departmental statements will include a strong focus on international activities. ISU has had a large impact on agriculture in the US and we've trained (in my department) a lot of international students who have had great, positive impacts in their home and other countries. However, we have very limited international programs overall compared to other institutions such as Cornell U., UCD, Michigan State, U Florida, VPI, and many other Land Grants. Perhaps a primary reason is due to ISU having hired so many native Iowans with 2 or 3 degrees from ISU? Our level of inbreeding seems excessive to this newcomer, and we continue to inbreed.
89	Agriculture is the most common global issue all people must understand.
100	Iowa State University's research reach is global and the findings of researchers are implemented all over the world. Additionally, understanding the assumptions and practices of other cultures allow the U.S. and ISU to continuously improve our own agricultural practices in Iowa and in the U.S. Further, we are at the center of one of the largest agricultural economies in the world - if we do not consider international agricultural practices or integrate them into teaching or research, we will eventually fall behind in innovation and development because of a lack of a global perspective.
127	I am not sure I agree that we (internal ISU folks) should encourage it - I think we should make sure we are involving the folks that hire our graduates - and ask them if it would be a benefit. And then form experiences and incorporate international examples to match our partners' desires for graduates.
128	Globalization. Catch the wave
143	in the best interests of our students and the State of Iowa
154	Help them become more competitive in the job market and/or open more entrepreneurial opportunities
162	The broader our view, the greater the opportunities for our students and our Iowa communities. We miss opportunities if we fail to engage with the rest of the world.
170	Well, I feel that employers and organizations who are hiring our undergraduates, for the most part, embrace a global market place and they too understand the importance of cultural diversity and how the global market impacts their business/organization. Therefore, they are seeking students who have already been exposed to experiences abroad who already have an understanding of how things work in other countries. Hence, we need to do a service to our students by exposing them to more cultural experiences/information so that way they too can grow and develop their global perspective and learn how it relates to their specific field of interest.

Table 31. (Continued).

N	Opinion
187	Iowa State University and the College of Agriculture and Life Sciences' graduates need to have a global perspective to live and work effectively during their lifetime. Iowa State University is committed to educating current and future generations of students. In fact, the new strategic plan for 2017-2022 includes "Provide learning opportunities to prepare students for lives and careers in dynamic, global community".
188	Agriculture and food production will be of increasing importance.
191	It will benefit students as individuals and professionals
197	The US continues to be involved in international trade.
199	relevance to understanding problems
203	The Global Resource Program is exceptional in terms of providing an international perspective and experience for students. Study Abroad courses are abounding which is great. What are missing are substantial scholarship awards for Study Abroad at the Presidential level. At a previous institution, Presidential semester abroad scholarships were $5,000. At Purdue University the current President guarantees every student studying abroad for a semester a $3,000 scholarship.
215	We live in a global society; what we do will effect others. We need to understand the interdependence and consequences for our actions. It will be interesting to observe how the next president handles "internationalization".
216	The agricultural community in Iowa is set in its way, the general population need a broader education to understand problems outside the U.S. Expanding the intellectual and cultural exposure of Iowans to different systems and cultures will improve the system within Iowa, and will benefit the openness of their attitudes.
221	Agriculture is the largest business on Earth. Agriculture is the most important business on Earth. Trade is essential to physical and economic sustainability.
222	We need global programs to insure our knowledge is globally relevant and our graduates are globally valued. I stress - though - global - which means a balance of international, national and local. And I stress faculty should cover their expertise in depth in classes, which from a agriculture point of view means local is going to be our greatest strength if for no other reason we are local with most of our experiments and knowledge.
232	To attract the best agricultural students internationally and to prepare the best possible students for entering careers with multinational companies.
239	Encouraging students to view ideas and solution through a global lens. We participate in a global society.
255	We live in a global society now. Energy, resources, pollution, species, disease, etc. do not necessarily follow or respect political boundaries.
284	Maintaining relevance to global agriculture.
300	The world economy is interdependent or influenced more by international food and other goods exports and imports, increase in multi-cultural work force in the US, increase in international scope of agricultural businesses and technology transfer, marketing and resource availability.
301	The global community and inter-dependence for economic welfare
302	would not want to see global agriculture have mandated requirements for all students
322	We live in a global economy. To be successful, we need to understand it and be able to work with others.
324	We are a global society - students from around the globe get there education at ISU, ISU has a Globe Major that focuses on international development, study abroad provides students opportunities to broaden their horizons.

CHAPTER 5. SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

The study was aimed at assessing and analyzing the perceptions of faculty members of the College of Agriculture and Life Science at Iowa State University regarding the infusion of global perspectives into the curriculum and compares the results with the data generated by King in 1991. This chapter has four sections: (1) Summary; (2) Conclusions; (3) Recommendations; and (4) Recommendations for Further Research.

Summary

Morey (2000) asserted that "…the first response of many universities wishing to better prepare educators for a diverse and global world is to add courses to the curriculum in such areas as multicultural education" (p. 28). The infusion of multicultural issues and perspectives in curricula has been found to have "long term impact on knowledge, attitudes and professional skills however, such benefits were not specific to classes that had been targeted for curriculum revision" (Anderson, MacPhee, & Govan, 2000, p. 1).

This study used a descriptive survey method in a form online questionnaire sent to the respondents using their official university e-mail addresses of the all the 324 faculty members of the College of Agriculture and Life Sciences to find their perceptions on the infusion of global perspectives into the curriculum. The e-mail list was provided by the ISU - Office of Institutional Research. Sixty-five faculty members provided useful responses in the survey for a 20 percent response rate. The survey software Qualtrics was utilized in this study to send survey questionnaire to the respondents. Information generated included demographic data (age, gender, race), academic rank, department affiliation, number of years of teaching, primary workload, student activities, discussion

topics, reasons for adding global perspectives, curriculum problems, activities for curriculum development, review of department programs, institutional documents, importance of global issues and level of international programs.

Likert-scale data were also collected on 16 perception statements regarding the infusion of global perspectives into the curriculum and 48 critical content areas/topics to be taught from a global perspective in the ISU-CALS. All these data collected were compared to the data collected by King in 1991 and subsequent comparative analysis was performed.

The inferential procedures included Chi-Square, *t*-test and Analysis of Variance (ANOVA) for comparison of the data collected from the respondents. Microsoft Excel Office and Statistical Package for Social Sciences (SPSS) were used in analyzing the data in the computer. The data analyzed were sought to answer the specific objectives of the study.

A summary of findings in the study follows:

1. There were statistical differences observed at $p \leq 0.005$ on the gender of the respondents, with 90% male and 10 female in the 1991 study, and 74% male and 26% female in the 2016 study.
2. The study revealed significant differences at $p \leq 0.005$ on ages of the respondents in the 1991 and 2016 studies when grouped into five brackets.
3. There were no statistical differences noted on the faculty ranks, race, years of teaching experience, and department affiliations of the respondents in both the 1991 and 2016 studies.

4. The results show significant differences at $p \leq 0.001$ on the primary workload of the respondents in the 1991 and 2016 studies. More faculty members have relatively higher combined assignments in the areas of teaching, research and extension in the 2016 study.
5. There were statistical differences at $p \leq 0.005$ on the comparative student activities of the respondents in the 1991 and 2016 studies.
6. The study revealed no significant differences on the comparative discussion topics of the respondents and comparative reasons for adding global perspectives into the curriculum by the respondents in the 1991 and 2016 studies.
7. The results show significant differences at $p \leq 0.05$ noted on the comparative responses about the departmental curriculum problems by the respondents in the 1991 and 2016 studies.
8. Based on statistical analysis, there were significant differences at $p \leq 0.005$ observed on the comparative responses on the activities for curriculum improvement of the respondents in both 1991 and 2016 studies.
9. There were no significant differences on the comparative responses on the conduct of department planning, study or review undertakings toward strengthening and increasing internationalization and the availability of institutional documents that indicate commitment to internationalization by the respondents in the 1991 and 2016 studies.
10. The study revealed no significant differences on the comparative responses on the importance of global issues, problems and/or opportunities and the level of

internationally related program and activities at Iowa State University during the next ten to twenty years in the 1991 and 2016 studies.

11. From the sixteen identified perception statements regarding the infusion of global perspectives into the curriculum, four perception statements were found to be statistically different in the two years that were compared.
12. From the forty-eight identified critical content/topics to be taught from a global perspective in the College of Agriculture and Life Sciences, ten were found to be statistically different in the two years that were compared.
13. There were no significant correlations observed between age of respondents and perception statements and critical content/topics in 1991 and 2016.
14. No positive correlations were noted between academic rank of respondents and perception statements and critical content/topics in 1991 and 2016.
15. Based on analysis, no correlations were observed between teaching experience of respondents and perception statements and critical content/topics in 1991 and 2016.
16. Based on Analysis of Variance (ANOVA), both perception statements and the critical content/topics were not significantly different among the age groups of the respondents in the 1991 study and the same no significant differences were found on the perception statements and the critical content/topics in the current study.
17. Based on Analysis of Variance (ANOVA), both perception statements and the critical content/topics were found to be not significantly different among the academic ranks of the respondents in the 1991 study and the same no significant differences were found on the perception statements and the critical content/topics in the current study.

18. Based on Analysis of Variance (ANOVA), both perception statements and the critical content/topics significantly different at $p \leq 0.001$ and $p \leq 0.05$, respectively in the different identified races of the respondents in the 1991 study. Moreover, no significant differences were observed on both the perception statements and the critical content/topics in the current study.
19. Based on Analysis of Variance (ANOVA), both perception statements and the critical content/topics were not significantly in the different department affiliations of the respondents in the 1991 study and the same no significant differences were found on both the perception statements and the critical content/topics in the current study.
20. The respondents' own opinion on the rationale to develop, maintain or establish a commitment to internationalization were divided into the following theme: globalization is imminent; students need globalized view; global education requires innovations; funding to succeed is required; and, global community emerges.

Conclusions

The general purpose of the study was to compare the perceptions of faculty members at the College of Agriculture and Life Sciences at Iowa State University regarding the infusion of global perspectives into the curriculum. From the findings of the current study, it can be concluded that the demographic and occupational information of the respondents in two years being compared were similar in the variables department affiliations, academic rank, and race groups. Moreover, the policy for gender equality in the workplace seems to be taking place as the percentage of female respondents were

higher in the current study. More respondents in the current study are considered older indicative of their willingness to share their experiences.

Faculty members are currently receiving multiple assignments in the area of teaching, research and extension. They had different perceptions on the use of students activities of respondents infuse global perspectives into the curriculum, the reasons for departmental curriculum problems, and the activities for curriculum improvement. Moreover, they did not differ in view regarding the discussion topics needed, the reasons for adding a global perspectives, the conduct of department review, availability of institutional documents that indicate commitment to internationalization, the importance of global issues, problems and/or opportunities and the levels of internationally related programs and activities at Iowa State University in the next ten to twenty years.

The respondents provided the same level of perception on majority of the statements and critical content or topics for the infusion of global perspectives. Majority of the perception statements and critical content or topics are still considered relevant by the faculty members. This is parallel to the assertion of Christensen as early as 1988 arguing that, “no college or university graduates have been properly educated unless they have attained an international perspective in their curricula or profession” (p. 27).

Correlation coefficients between the demographic data (age, academic rank, number of years of teaching experience) with the variables perception statements on internationalization and critical content/topics to be taught were comparable.

Recommendations for Practice

Based on the findings in this study the following recommended were made:

1. The College of Agriculture and Life Sciences should increase funding to support internationalization activities both for students and faculty members. The need for financial support was one of the reasons for department curriculum problems discussed in Table 12. This is in line with the findings of Irani, Place, and Friedel (2006), who stated that "…concerns about financial costs and time were the barriers that appeared most salient to students" (p. 36). On the other hand, in internationalizing undergraduate agricultural curriculum, Navarro (2004) recommended the increase, diversity and balance provision of funds for faculty participating in mobility and infusion efforts.
2. The results of this study can be shared to the administration and management of the College of Agriculture and Life Sciences for possible consideration in the formulation of college policies and strategic plans.
3. The College of Agriculture and Life Sciences should encourage greater participation of the faculty members in international development activities, faculty-led study abroad programs, research collaborations and bilateral exchange programs. The perception that faculty can be helpful in the development of globally responsible personal and professional activities received a score of 4.37 out of 5.0 in the current study.
4. The implications and limitations of the present study suggest that additional further studies on ways to increase survey response should be conducted. A

comparison of several approaches including the use of the classical paper questionnaire should be done.

5. College and departmental level leadership is necessary to hire high proportion of faculty members with a world view that can truly infuse global agricultural awareness to the students through the curriculum. The perception on faculty needing to have a background of international knowledge in order to help students develop attitudes and practices that will be more compatible on a global scale received a high mean score of 3.80 in both years of study.
6. Departmental policies and information documents relating to infusion of global perspectives must be well disseminated. Approximately one third of the respondents in the 1991 study and whereas 29% of the present study indicated the non-availability of institutional documents.
7. As suggested by Irani, Place, and Friedel (2006), perception studies similar to this "support the need for more long-term data collection design to assess changes in perceptions over time; acculturate students to be more receptive and motivated to engage in international experience" (p. 36).
8. Periodically assess CALS infusion of global perspective into the curriculum. The respondents in both studies had indicated a high level of importance on global issues, at 87% and 78% for 1991 and 2016, respectively.
9. Faculty members undergoing annual evaluation review can be given incentive for their participation in student surveys. Their participation as indicated in the dossier is, in itself, an accomplishment and a reflection of their willingness to assist students to succeed in their research studies. Moreover, the incentive must be well

specified and discussed within the faculty body. There ought to be a mechanism that would allow for the positive acceptance of the incentive. The incentive should not be something that may affect the responses in any way but would, rather, encourage greater participation in survey studies primarily within the college where they serve. Incentives should be viewed as serious steps in research process (Cobanoglu & Cobanoglu, 2003). Incentives were found to have the highest positive influence on response rates in survey (Bosnjak & Tuten, 2003). We know from studies that providing material rewards can bring up the response rate and minimize participants dropping out of the survey (Goritz, 2006).

Recommendations for Further Study

Based on the findings in this study, the following are recommended for further study:

1. It would be worthwhile to study the perceptions of administrators on the infusion of global perspectives into the curriculum of the department or the college that they lead.
2. A similar study can be conducted in other colleges within Iowa State University and in other land-grant and non land-grant universities to make a comparison.
3. A specific qualitative study can be conducted focusing on the experiences of the faculty members who have successfully infused global perspectives into their curriculum of the courses they are teaching.
4. The use of a more personalized method survey like paper should be revisited.

CHAPTER 6. IMPLICATIONS

The conduct of each research study is expected to contribute to the present body of knowledge. Each literature contribution can be considered as helpful for advancing the current information available; thus, the additional finding generated following an academic study such as the current research have the potential to increase one's understanding of functional educational systems in society. A functional system requires constant upgrading and re-assessment to meet the needs and calls of the time. A scholarship within the realm of the academe through its implications can contribute for the improvement of the current educational practices in higher education. The following implications of this study are relevant to the theoretical and conceptual bases as well as for the practice of agricultural education.

Theoretical and Conceptual

The results of the study reinforced the philosophical foundation that requires the infusion of global perspectives to be relevant to 21st century curriculum. The findings further support White's (2016) assertions on the attainment of positive global changes and cooperation within the domain of education. As acknowledged in the past, universities are the most appropriate venues to start needed social changes such as building globalized communities. Reconstructivists enable educators to focus on the curriculum to initiate the needed changes in society through quality and affordable education. Social reform as the ultimate purpose of education must emanate from the sites where knowledge is acquired and perspectives are broadened within the halls of colleges wherein the teaching-learning process occurs.

The findings based on the respondents' opinions of the establishment, maintenance, or development of a commitment to globalization of the curriculum were indicative of the imminence of the curricular change that should be forthcoming to be competitive in the global labor market. Reconstructivism theory in the context of global higher studies require infusion of new understanding of world communities that would lead to improved social reforms for the benefit of humanity. Such benefits include the ability to connect to different cultures, understand the dynamics of various political systems and work harmoniously with different nationalities in international work sites. The impending awareness of the need to be a global citizen has been emphasized to heed to the calls of the current times for students to adapt to a larger and broader view of the global village where they live. Strategic plans in various universities reflect the need to educate students as global citizens and with this is the need to revisit the curriculum to introduce or infuse global perspectives to better understand the interconnected of the systems occurring in each nation and the common needs of the people populating the globe.

The model for the cognitive approach to behavior by Deci (1975) illustrates the motivation of faculty members to infuse global perspectives into the curriculum. While faculty perception was the theme of the study, the motivation that governs this perception became evident with responses that varied in scope. The choices that were made by the respondents were based clearly on their assessment which was geared towards satisfying a specific need. Humanistic theory aims at attaining the full potential of a person, and motivation is affected by each individual's personality.

The respondents' views on students' activities to ascertain their international perspectives revealed comparative reasons for departmental curriculum problems and activities for curriculum improvement that are manifested in the conceptual base of obtaining diverse perceptions. Demographic and occupational information provided on gender, age and primary workload were also different for the years that were compared. From the identified perception statements and critical content/topics, four of the 16 identified perception statements and 10 of the 48 identified critical content/topics were statistically different which indicates a slight variability which may be affected by the strategies within an academic program, the organizational set-up, and the institution as a whole. Such differences may also be the result of the organization or department where teaching occurs, individual motivation/stimulus is made, or in the clientele that are served. Moreover, the theory and concept base of possible changes in perceptions indicated that, even after 25 years, the perceptions of CALS faculty members regarding the infusion of global perspectives has remained similar on a majority of the statements for internationalization and perceived critical topics to be taught from a global perspective.

Practice in Agricultural Education

The results of the study may have useful implications for the education profession as well as the general practice education among agricultural faculty members. The information generated regarding the comparative perceptions of the College of Agriculture and Life Sciences faculty members may act as guides in developing plans to fully integrate global views into the agriculture curriculum. Faculty members and administrators as well as researchers can use the results as a basis for future studies to implement needed

changes, and for decision-making purposes on appropriate measures to implement university strategic plans regarding global citizenry. The data generated may provide a pulse of the faculty members' perceptions and present a mindset that may be crucial from an educational management point of view. The data also revealed the level of success attained during the past 25 years. The perception statements and critical content/topics to be taught in globalized curriculum are still relevant and useful, and this follow-up study can be used to attest to the understanding that globalizing the curriculum is important to faculty members in the College of Agriculture and Life Sciences.

Justifications for the internationalization of the curriculum is a timely response as "we have entered the age of the global economy" (Dale, 1997). With the findings from this study and other research work that has been conducted previously in this area, the results generated can also offer some needed information to further justify the addition of global perspectives into the College of Agriculture curriculum.

Several studies among different populations have been conducted in recent years at Iowa State University regarding the infusion of global perspectives into the curriculum. For example, Sammons (1995) studied the perceptions of undergraduates at ISU-College of Agriculture; Dale (1997) studied the perceptions of recent graduates from selected land-grant universities; King (1991) studied the perceptions of faculty members at ISU-College of Agriculture, and VanDerZanden and Iles (2013) studied how to help students become global citizens using a study abroad activity among undergraduate students at the Department of Horticulture at ISU. Each of these studies focused on the urgent need for a globalized approach in the teaching and learning processes to better prepare students to think globally, cooperatively, and diversely.

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APPENDIX A. INSTITUTIONAL BOARD (IRB) APPROVAL

IOWA STATE UNIVERSITY
OF SCIENCE AND TECHNOLOGY

Institutional Review Board
Office for Responsible Research
Vice President for Research
1138 Pearson Hall
Ames, Iowa 50011-2207
515 294-4566
FAX 515 294-4267

Date: 3/27/2015

To: Ronaldo Magtoto
310 24th St
Ames, IA 50010

CC: Dr. Robert Martin
201 Curtiss Hall

From: Office for Responsible Research

Title: Faculty Perceptions Regarding the Infusion of Global Perspectives into the College of Agriculture and Life Sciences Curriculum: A Comparative Study

IRB ID: 15-184

Study Review Date: 3/27/2015

The project referenced above has been declared exempt from the requirements of the human subject protections regulations as described in 45 CFR 46.101(b) because it meets the following federal requirements for exemption:

- (2) Research involving the use of educational tests (cognitive, diagnostic, aptitude, achievement), survey or interview procedures with adults or observation of public behavior where
  - Information obtained is recorded in such a manner that human subjects cannot be identified directly or through identifiers linked to the subjects; or
  - Any disclosure of the human subjects' responses outside the research could not reasonably place the subject at risk of criminal or civil liability or be damaging to their financial standing, employability, or reputation.

The determination of exemption means that:

- **You do not need to submit an application for annual continuing review.**

- **You must carry out the research as described in the IRB application.** Review by IRB staff is required prior to implementing modifications that may change the exempt status of the research. In general, review is required for any modifications to the research procedures (e.g., method of data collection, nature or scope of information to be collected, changes in confidentiality measures, etc.), modifications that result in the inclusion of participants from vulnerable populations, and/or any change that may increase the risk or discomfort to participants. Changes to key personnel must also be approved. The purpose of review is to determine if the project still meets the federal criteria for exemption.

  Non-exempt research is subject to many regulatory requirements that must be addressed prior to implementation of the study. Conducting non-exempt research without IRB review and approval may constitute non-compliance with federal regulations and/or academic misconduct according to ISU policy.

  Detailed information about requirements for submission of modifications can be found on the Exempt Study Modification Form. A Personnel Change Form may be submitted when the only modification involves changes in study staff. If it is determined that exemption is no longer warranted, then an Application for Approval of Research Involving Humans Form will need to be submitted and approved before proceeding with data collection.

Please note that you must submit all research involving human participants for review. **Only the IRB or designees may make the determination of exemption**, even if you conduct a study in the future that is exactly like this study.

Please be aware that **approval from other entities may also be needed.** For example, access to data from private records (e.g. student, medical, or employment records, etc.) that are protected by FERPA, HIPAA, or other confidentiality policies requires permission from the holders of those records. Similarly, for research conducted in institutions other than ISU (e.g., schools, other colleges or universities, medical facilities, companies, etc.), investigators must obtain permission from the institution(s) as required by their policies. **An IRB determination of exemption in no way implies or guarantees that permission from these other entities will be granted.**

Please don't hesitate to contact us if you have questions or concerns at 515-294-4566 or IRB@iastate.edu.

APPENDIX B. SURVEY INSTRUMENT

Dear Faculty Member,

My name is Ronaldo Magtoto and I am graduate student at the Department of Agricultural Education and Studies. I am working on a research study to explore faculty perceptions regarding the infusion of global perspectives into the College of Agriculture and Life Sciences curriculum. My research is under the supervision of Dr. Robert Martin.

This study has been approved by the ISU Institutional Review Board. If you agree to participate, your response will be kept confidential and no identifying information will be acquired through participation.

The online survey will take approximately 15-20 minutes to complete.

Please follow the link below to complete the survey:

Please contact me at rmagtoto@iastate.edu or Dr. Robert Martin at drmartin@iastate.edu with any concerns or questions about this research. Thank you.

Best regards,

Ronaldo

Research Survey on Faculty Global Perspective

Q1 Part A. Indicate how much you agree on the following statements:

	Strongly disagree (1)	Somewhat disagree (2)	Neither agree nor disagree (3)	Somewhat agree (4)	Strongly agree (5)
1. As citizens of the United States and of the world, Iowans have an obligation to improve their knowledge of other countries' agricultural systems.	❍	❍	❍	❍	❍
2. The agriculture curricula should provide students with opportunity to develop an agricultural knowledge base about the dynamics and inter-dependence of nations throughout the world.	❍	❍	❍	❍	❍
3 .Educators can enhance student development by helping them recognize the global nature of many issues and technologies that affect their lives and bind them to other nations and peoples.	❍	❍	❍	❍	❍
4. The total college curriculum should reflect a respect for and knowledge of the global community.	❍	❍	❍	❍	❍
5. Agriculturally diverse content is an important part of the curricula of the College of Agriculture.	❍	❍	❍	❍	❍

Q2 Greater Diversity

	Strongly disagree (1)	Somewhat disagree (2)	Neither agree nor disagree (3)	Somewhat agree (4)	Strongly agree (5)
6. The citizens of Iowa should gain a greater awareness of the interdependence among nations.	❍	❍	❍	❍	❍
7. Faculty can be helpful in the development of globally responsible personal and professional activities.	❍	❍	❍	❍	❍
8. The College of Agriculture and Life Sciences should have a foreign language requirement.	❍	❍	❍	❍	❍
9. The College of Agriculture and Life Sciences should vigorously encourage international internships for all undergraduate students.	❍	❍	❍	❍	❍
10. All faculty in the College of Agriculture and Life Sciences need to have a professional international experience.	❍	❍	❍	❍	❍

Q3 World Community

	Strongly disagree (1)	Somewhat disagree (2)	Neither agree nor disagree (3)	Somewhat agree (4)	Strongly agree (5)
11. In the context of Iowa's participation in the world community, it is imperative to employ faculty with an international perspective.	❍	❍	❍	❍	❍
12. Faculty need to have a background of international knowledge in order to help students develop attitudes and practices that will be more compatible on a global scale.	❍	❍	❍	❍	❍
13. There is no need to continue effort in helping students develops a global perspective in agriculture; they'll get this elsewhere in the university.	❍	❍	❍	❍	❍
14. Global agricultural knowledge should be among the principal concerns of higher agricultural education in every country.	❍	❍	❍	❍	❍
15. Increasing Iowans' awareness of the state's involvement in international agriculture is an important goal that should be integrated into the College of Agriculture and Life Sciences curricula.	❍	❍	❍	❍	❍
16. As a whole the College of Agriculture and Life Sciences is supportive of the idea of integrating a global perspective into all agricultural courses.	❍	❍	❍	❍	❍

Q4 Part B. Indicate the importance of the following agricultural concepts/principles as they apply to infusing global perspectives

	Not at all important (1)	Slightly important (2)	Moderately important (3)	Very important (4)	Extremely important (5)
1. Green Revolution	❍	❍	❍	❍	❍
2. Sustainable Agriculture	❍	❍	❍	❍	❍
3. Indigenous knowledge systems	❍	❍	❍	❍	❍
4. Environmental management practices	❍	❍	❍	❍	❍
5. International marketing systems	❍	❍	❍	❍	❍
6. World food production practices	❍	❍	❍	❍	❍
7. Biotechnology	❍	❍	❍	❍	❍
8. Cultural traditions and food prod	❍	❍	❍	❍	❍
9. Economic geography	❍	❍	❍	❍	❍
10. World soil types (10)	❍	❍	❍	❍	❍

Q5 Systems and Practices

	Not at all important (1)	Slightly important (2)	Moderately important (3)	Very important (4)	Extremely important (5)
11. World agricultural systems	❍	❍	❍	❍	❍
12. Farming systems research	❍	❍	❍	❍	❍
13. World marketing systems	❍	❍	❍	❍	❍
14. Soil conservation practices	❍	❍	❍	❍	❍
15. Water management	❍	❍	❍	❍	❍
16. Selected government's policy in agriculture	❍	❍	❍	❍	❍
17. World cropping systems	❍	❍	❍	❍	❍
18. World livestock systems	❍	❍	❍	❍	❍
19. Food policy in selected countries	❍	❍	❍	❍	❍
20. Family farming in selected countries (10)	❍	❍	❍	❍	❍

Q6 Government and Labor

	Not at all important (1)	Slightly important (2)	Moderately important (3)	Very important (4)	Extremely important (5)
21. Relationship between culture and decision making	❍	❍	❍	❍	❍
22. Mechanization in selected countries	❍	❍	❍	❍	❍
23. Pest control	❍	❍	❍	❍	❍
24. Disease control	❍	❍	❍	❍	❍
25. Political systems impact on agriculture	❍	❍	❍	❍	❍
26. Intensive agriculture practices	❍	❍	❍	❍	❍
27. Government regulations	❍	❍	❍	❍	❍
28. Subsidies	❍	❍	❍	❍	❍
29. Labor availability	❍	❍	❍	❍	❍
30. Land tenure systems	❍	❍	❍	❍	❍

Q7 Technology and Extension

	Not at all important (1)	Slightly important (2)	Moderately important (3)	Very important (4)	Extremely important (5)
31. Monetary systems	❍	❍	❍	❍	❍
32. Appropriate technology	❍	❍	❍	❍	❍
33. Transfer of technology	❍	❍	❍	❍	❍
34. Extension systems	❍	❍	❍	❍	❍
35. Decision-making process and culture	❍	❍	❍	❍	❍
36. Trade policies	❍	❍	❍	❍	❍
37. Product sales/marketing strategies	❍	❍	❍	❍	❍
38. Imports and exports	❍	❍	❍	❍	❍
39. Labor intensive agriculture	❍	❍	❍	❍	❍
40. Technology intensive agriculture	❍	❍	❍	❍	❍

Q8 Food and Culture

	Not at all important (1)	Slightly important (2)	Moderately important (3)	Very important (4)	Extremely important (5)
41. Food processing	❍	❍	❍	❍	❍
42. Relationship between art and agriculture	❍	❍	❍	❍	❍
43. Transportation systems	❍	❍	❍	❍	❍
44. Communication systems	❍	❍	❍	❍	❍
45. Foreign language	❍	❍	❍	❍	❍
46. Storage for feed and food	❍	❍	❍	❍	❍
47. Cultural awareness	❍	❍	❍	❍	❍
48. Bioethics	❍	❍	❍	❍	❍
49. Other (please specify)	❍	❍	❍	❍	❍
50. Other (please specify)	❍	❍	❍	❍	❍

Part C. Activities currently being used to add global perspectives.

1. List student activities, if any, you are currently using in your courses to add a global perspective to your teaching.

2. List topics discussed in your courses/programs which add a global perspective to teaching and learning.

3. If you have added a global perspective to your coursework, what were your reasons for doing so?

Part D. Opinions of Participants.

1. List the three main challenges in infusing global perspectives into the curriculum
   a.
   b.
   c.

2. Propose three activities that would improve the infusing of global perspective into the curriculum
   a.
   b.
   c.

3. Within the last three years (2013-2015), has your department conducted any type of review, study, or planning activity directed toward evaluating, increasing or strengthening the international content or dimensions of departmental programs?

- ❍ Yes (1)
- ❍ Do not know (2)
- ❍ No (3)

3. Within the last three years (2013-2015), has your department conducted any type of review, study, or planning activity directed toward evaluating, increasing or strengthening the international content or dimensions of departmental programs?

- ❍ Yes (1)
- ❍ Do not know (2)
- ❍ No (3)

4. Have any recommendations for increasing or strengthening the internationally related program activities been implemented as a result of the above activities?

- ❍ Yes (1)
- ❍ Do not know (2)
- ❍ No (3)

5. Does your department have an institutional document (such as Mission Statement) that includes language that specifically indicates a commitment to internationalization of the department's course offerings and/or activities?

- ❍ Yes (1)
- ❍ Do not know (2)
- ❍ No (3)

6. Generally, do you think that the global issues, problems, and/or opportunities will become "More Important", "Stay About the Same", or "Become Less Important" to the parts of society that rely on services and products from the University during the next ten to twenty years?

- ❍ More important (1)
- ❍ Stay about the same (2)
- ❍ Less important (3)
- ❍ Do not know (4)

7. During the next ten to twenty years, do you think that the level of international related programs and activities at Iowa State University will "Increase", "Decrease", or "Stay About the Same", etc.?

- ❍ Increase greatly (1)
- ❍ Increase slightly (2)
- ❍ Stay about the same (3)
- ❍ Decrease slightly (4)
- ❍ Decrease greatly (5)
- ❍ Do not know (6)

8. In your own opinion, what is the rationale for encouraging Iowa State University to establish, maintain, or develop a commitment to internationalization of its programs, course offerings and activities?

Part E. Demographic Information

1. What is your age?

2. What is your gender?
- ❍ Male
- ❍ Female

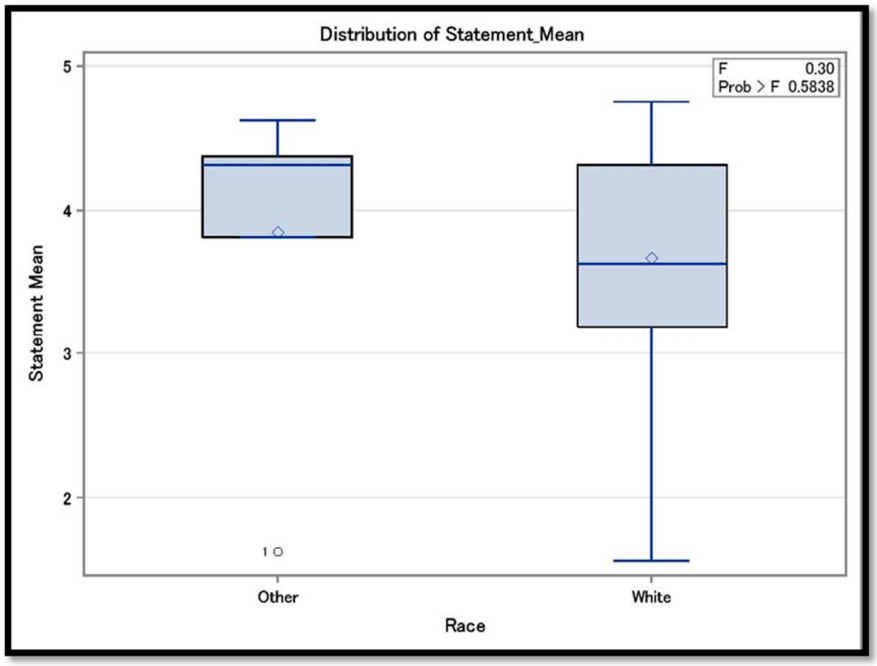
3. Indicate the percent of time in your present position that is allocated for each of the following:
_____ a. Teaching
_____ b. Research
_____ c. Extension
_____ d. Administration
_____ e. Others

4. How many years have you taught at Iowa State University?

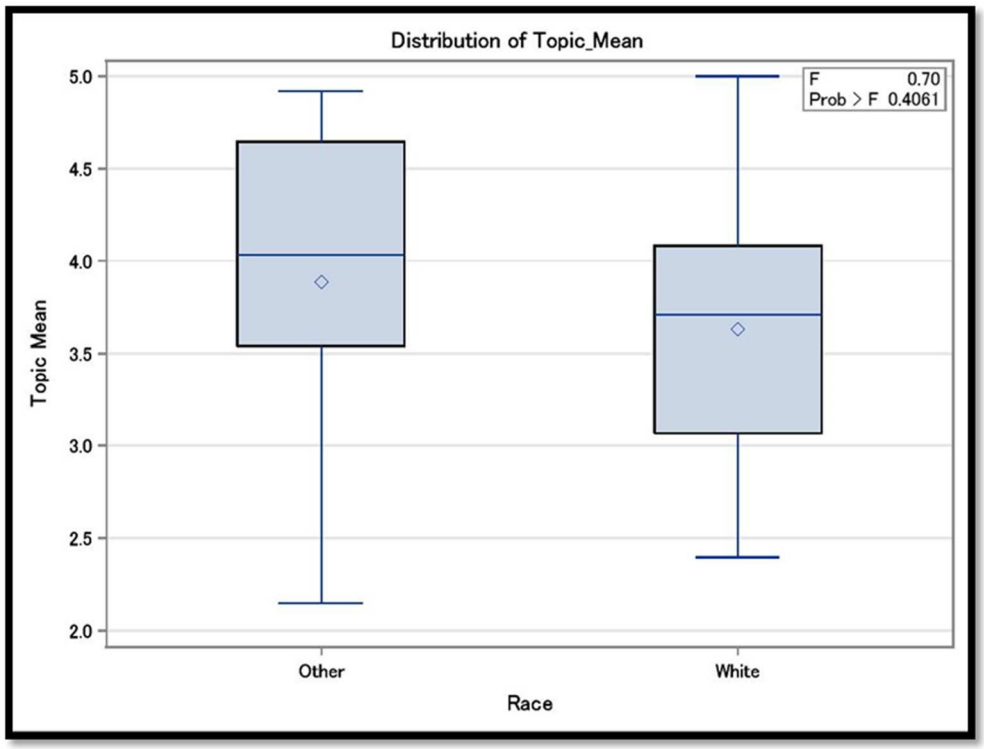
5. How would you describe yourself?
- ❍ White (1)
- ❍ Black or African American (2)
- ❍ American Indian or Alaska Native (3)
- ❍ Asian (4)
- ❍ Native Hawaiian or Pacific Islander (5)
- ❍ Other (6) _____

APPENDIX C. ADDITIONAL FIGURES FOR DISTRIBUTION OF THE MEANS

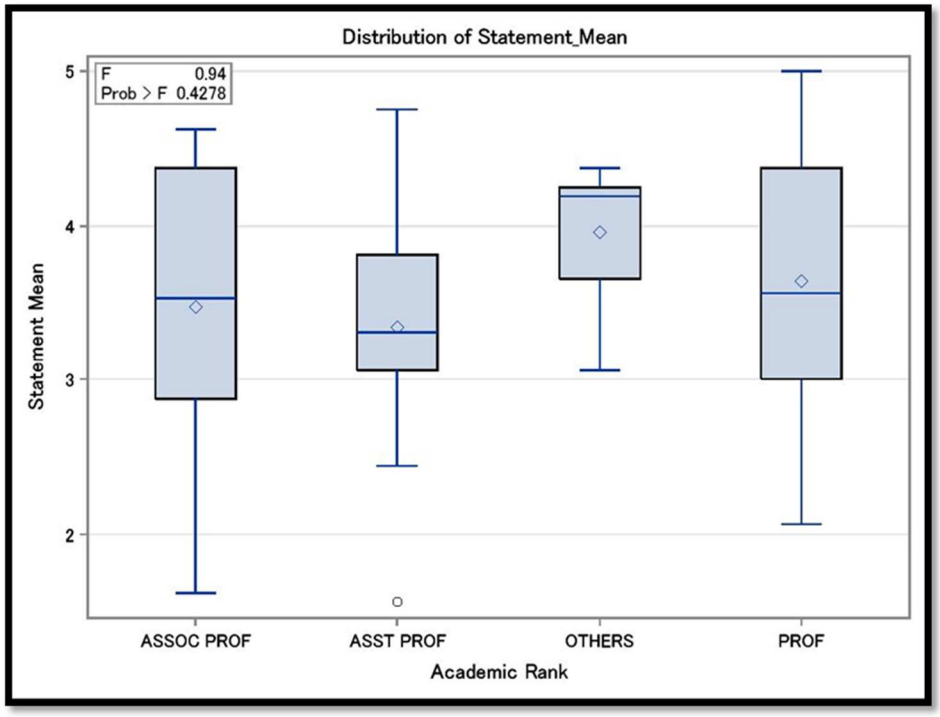
C-1. Perception statement means of 2016 respondents by race



C-2. Critical topic/content means of 2016 respondents by race

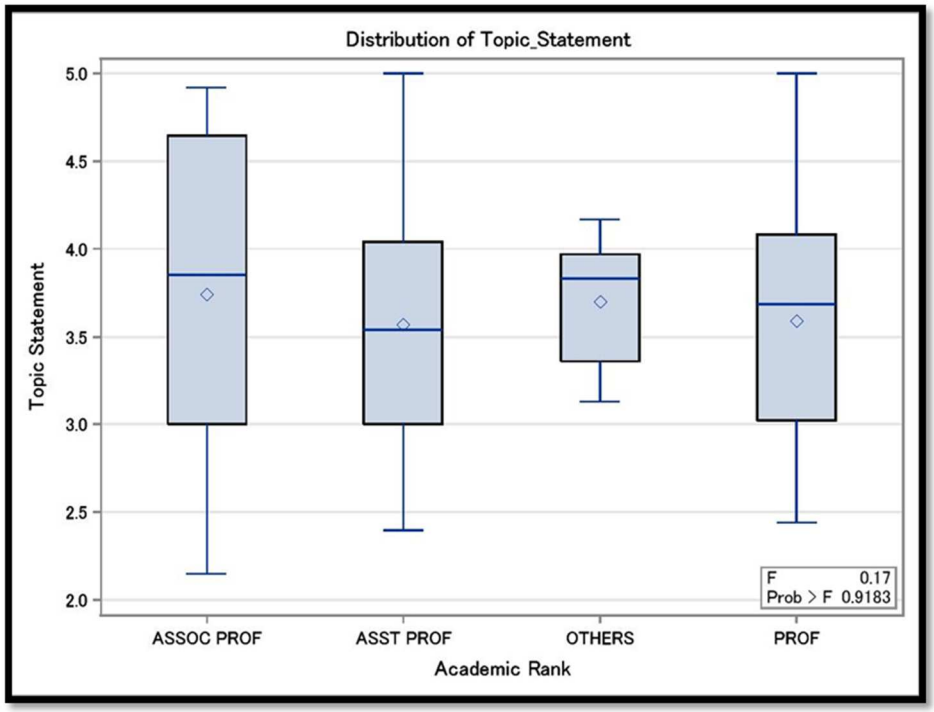


C-3. Perception statement means of 2016 respondents by academic rank



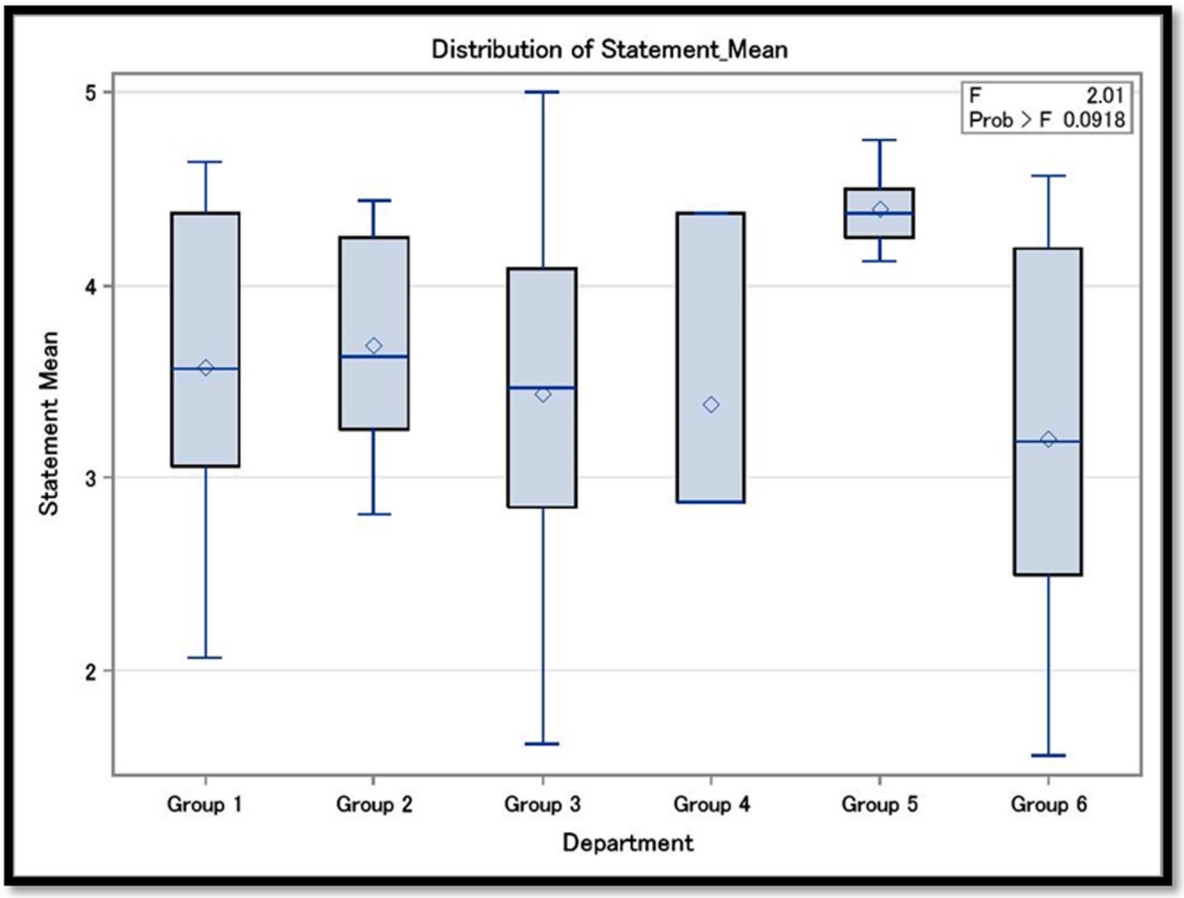
KEY: Group 1 = Assistant Professors; Group 2 = Associate Professors; Group 3 = Professors ; Group 4 = Others

C-4. Critical topic/content means of 2016 respondents by academic rank



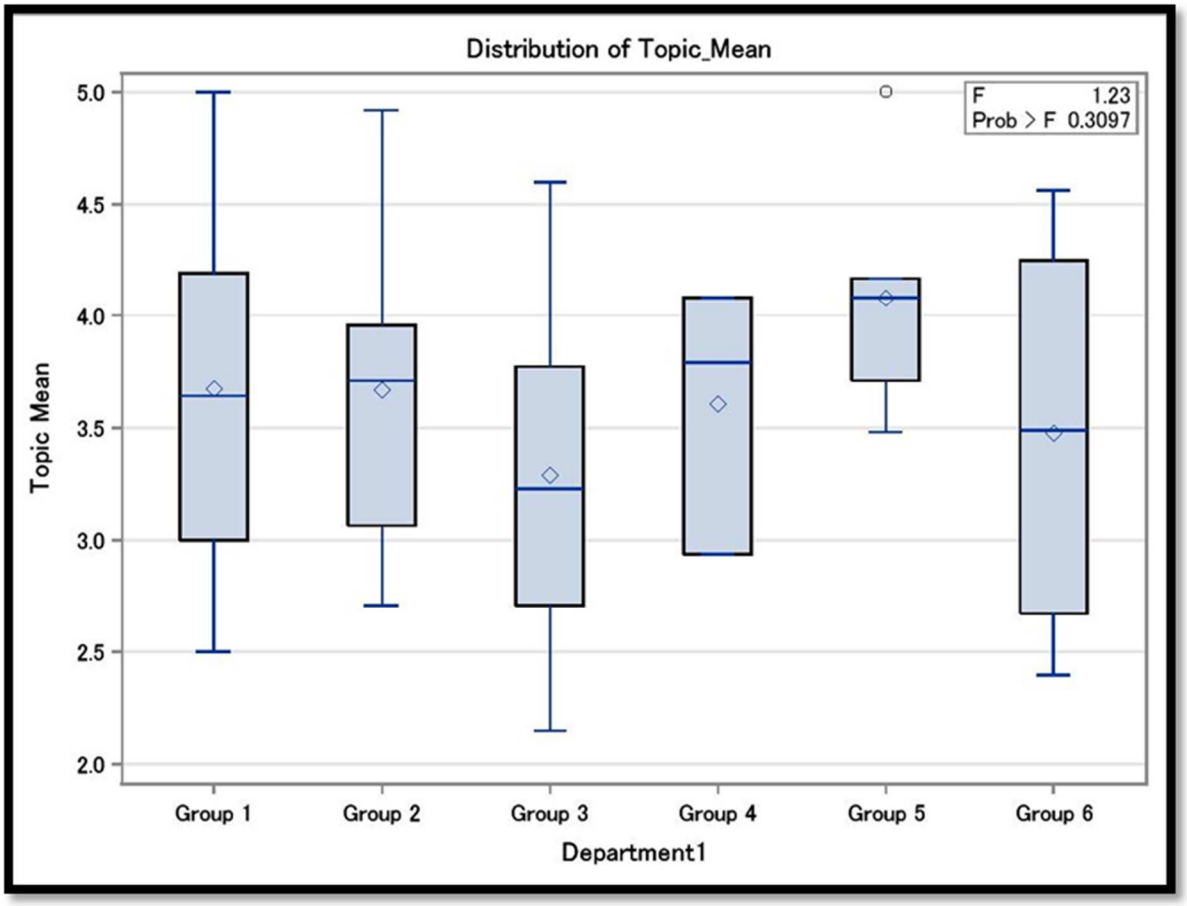
KEY: Group 1 = Assistant Professors; Group 2 = Associate Professors; Group 3 = Professors ; Group 4 = Others

C-5. Perception statement means of 2016 respondents by department affiliation



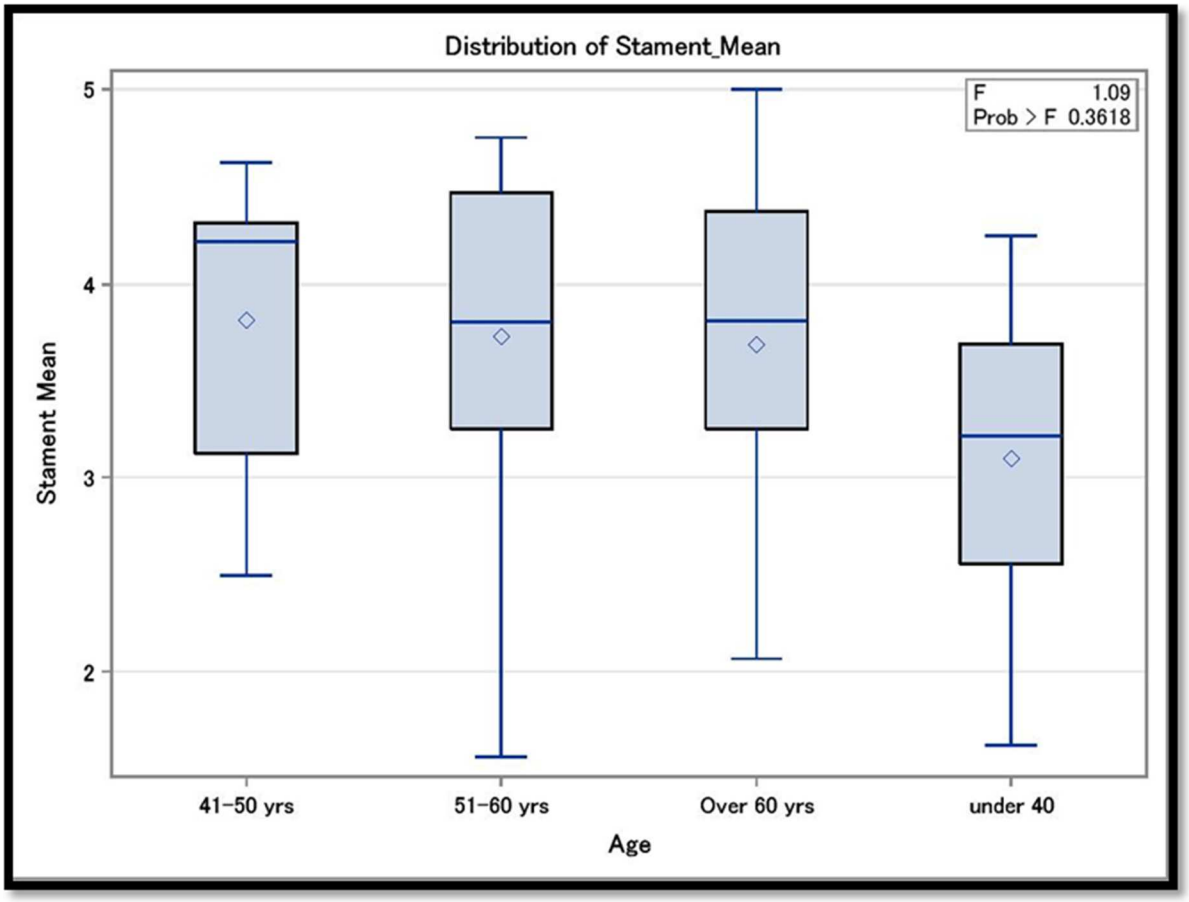
Group 1 = Ag Edu and Studies; Ag and Bios Eng; Economics; Sociology
Group 2 = Agronomy
Group 3 = Animal Science; Eco, Evol & Organ Bio
Group 4 = Bioch, Bioph & M Bio; Entomology; Gene, Dev & Cell Bio
Group 5 = Nat Res Ecolo & Mgt; Horticulture
Group 6 = Food Sci & Human Nut; Plant Path & Microbio

C- 6. Critical topic/content means of 2016 respondents by department affiliation



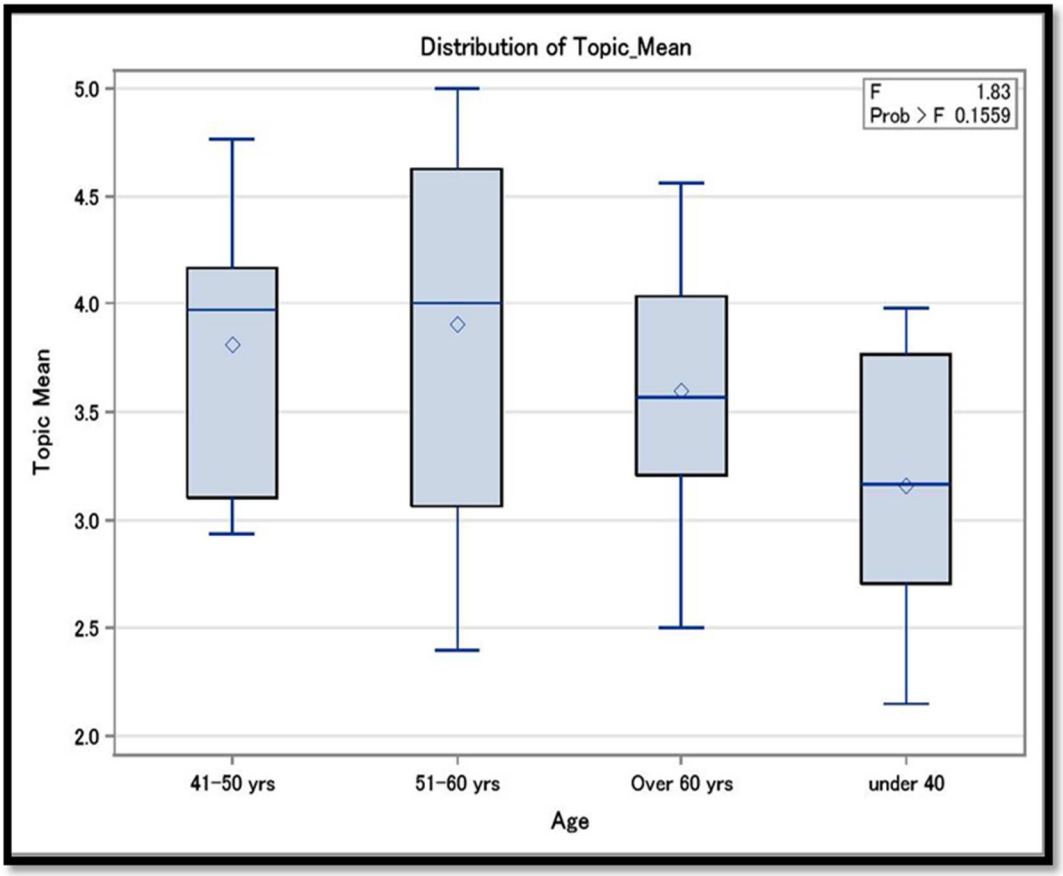
Group 1 = Ag Edu and Studies; Ag and Bios Eng; Economics; Sociology
Group 2 = Agronomy
Group 3 = Animal Science; Eco, Evol & Organ Bio
Group 4 = Bioch, Bioph & M Bio; Entomology; Gene, Dev & Cell Bio
Group 5 = Nat Res Ecolo & Mgt; Horticulture
Group 6 = Food Sci & Human Nut; Plant Path & Microbio

C-7. Perception statement means of 2016 respondents by age group



Group 1 = under 40 years of age
Group 2 = 41 – 50 years of age
Group 3 = 51 – 60 years of age
Group 4 = over 60 years of age

C-8. Critical topic/content means of 2016 respondents by age group



Group 1 = under 40 years of age
Group 2 = 41 – 50 years of age
Group 3 = 51 – 60 years of age
Group 4 = over 60 years of age

APPENDIX D. FREQUENCY DISTRIBUTION OF DEMOGRAPHIC AND INFORMATIONAL DATA

	1991		2016	
Items	Frequencies	Percentages	Frequencies	Percentages
Age				
Under 30	7	4.6	2	4.0
31-40	40	26.1	4	8.0
41-50	45	29.4	10	20.0
51-60	39	25.5	16	32.0
Over 60	22	14.4	18	36.0
Missing	2		0	
Total	155	100.0	50	100.0
Gender				
Male	138	89.6	46	74.0
Female	16	10.4	16	26
Total	155	100.0	62	100.0
Rank				
Assistant Professor	27	17.5	35	56.5
Associate Professor	22	14.3	10	16.1
Professor	89	57.8	9	14.5
Instructor	11	7.1	8	12.9
Other	4	2.6	0	0
Missing	1		0	
Total	155	100.0	62	100.0

Appendix D. (continued)

	1991		2016	
Items	Frequencies	Percentages	Frequencies	Percentages
No. Years Taught at I.S.U.				
None	5	3.3	0	0
Under 5	34	22.4	6	11.8
5-10	29	19.1	14	27.5
11-15	20	13.2	3	5.9
16-20	24	15.8	10	19.6
21-25	15	9.9	7	13.7
26-30	13	8.6	1	2.0
31-35	3	2.0	3	5.9
35 or more	9	5.9	7	13.7
Missing	3		0	
Total	155	100.0	51	100.0
Primary Workload				
Teaching	36	24.2	1	1.9
Research	62	41.6	9	17.3
Extension	6	4.0	10	19.2
Administration	16	10.7	0	0.0
International Activities	1	0.7	0	0
50/50: Teaching Research	23	15.4	32	61.6
3-way: Teach./ Res. /Exten.	1	0.7	0	0
Other	4	2.7	0	0
Missing	6		0	
Total	155	100.0	52	100.0

Appendix D. (continued)

	1991		2016	
Items	Frequencies	Percentages	Frequencies	Percentages
Race				
White	138	91.4	48	88.9
Black, Hispanic, Asian	13	8.6	6	11.1
Total	151	100.0	54	100.0
Department Affiliation				
Ag Education and Studies	10	6.4	7	11.3
Ag and Biosystems Engineering	7	4.7	7	11.3
Agronomy	26	17.3	11	17.7
Animal Science	16	10.7	11	17.7
Biochem, Biophys & Mol Bio	6	4.0	2	3.2
Economics	29	19.3	7	11.3
Ecology, Evolution & Organ Bio	10	6.7	1	1.6
Entomology	7	4.7	1	1.6
Food Science & Human Nutrition	6	4.0	3	4.8
Genetics, Dev & Cell Bio	5	3.3	0	0.0
Horticulture	6	4.0	5	8.1
Natural Res Ecology & Mgt	4	2.7	2	3.2
Plant Pathology & Microbiology	12	8.0	3	4.8
Sociology	6	4.0	2	3.2
Total	150	100.0	62	100.0

Appendix D. (continued)				
	1991		2016	
Items	Frequencies	Percentages	Frequencies	Percentages
Reasons for adding global perspective				
Personal interest	22	9.3	3	4.8
Rel. bet. Global economy and ag	11	4.6	4	6.5
Integrate U.S. into global comm	8	3.4	5	8.1
Nec. For understanding agric.	17	7.2	6	9.7
Student interest	5	2.1	4	6.5
Pertinent to course sub. Matter	27	11.4	4	6.5
Student Development	46	19.4	5	8.1
No Comment	101	42.6	31	50
Department Curriculum Problems				
There are no problems	5	3.5	1	1.1
Stud. & Fac. Experiences Needed	18	12.5	8	12.9
More Focus on Research	3	2.1	2	2.7
Needs Financial Support	7	4.8	3	5.4
More Application Needed	17	11.8	1	2.1
Lacks Integration	9	6.5	5	8.6
More Rigor Needed	11	7.6	3	5.4
Narrow & Restrictive	37	25.6	7	10.7
No Comment	37	25.6	32	51.0

Appendix D. (continued)				
	1991		2016	
Items	Frequencies	Percentages	Frequencies	Percentages
Activities for Curriculum Improvement				
Discuss and Evaluate it	10	8.0	2	3.2
Internationalize Content	13	10.4	4	6.4
Improve Teaching/Instruction	15	12.0	3	4.9
Stud. & Fac. Experiences Needed	9	7.2	3	4.9
More Integration Needed	10	8.0	3	4.9
Increase Financial Support	9	7.2	4	6.4
Add Foreign Lang. Requirement	3	2.4	3	4.9
Refocus/Restructure It	23	18.4	4	6.4
No Comment	32	26.0	36	58.1
Review of Department Programs				
Yes	33	23.6	22	37.9
No	56	40.0	22	37.9
Do not know	51	36.4	14	24.2
Total	140	100.0	58	100.0
Institutional Document				
Yes	32	23.4	22	37.3
No	45	32.8	17	28.8
Do not know	60	43.8	20	33.9
Total	132	100.0	59	100.0

Appendix D. (continued)				
	1991		2016	
Items	Frequencies	Percentages	Frequencies	Percentages
Importance of Global Issues				
More Important	123	86.6	46	78.0
Stay about the same	18	12.7	11	18.6
Less Important	1	0.7	2	3.4
Total	142	100.0	59	100.0
Level of International Programs				
Increase greatly	43	30.1	21	35.6
Increase slightly	91	63.6	30	50.8
Stay about the same	7	4.9	5	8.5
Do not know	2	1.4	3	5.1
Total	143	100.0	59	100.0