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***Globalization: Implications for Teaching and Learning
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“Globalization: Implications for teaching and learning in post-secondary agricultural education”

Deadline for submissions: May 1, 2013

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Recommended Topics:

We invite different types of contributions including empirical research, conceptual models, theory building, innovative methods and applications, case studies and innovative teaching tips. Topics to be discussed in this special issue include (but, are not limited to):

- Assessing outcomes of global experiences
- Pedagogy of facilitating effective study abroad experiences
- Developing learning outcomes/objectives of global experiences
- Internationalizing curriculum on campus
- Creating contextual relevance to global experiences.
- Utilizing social networking in global experiences
- Effective reflection in global experiences
- Involving strategic/global partners in global agricultural education

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NACTA Journal

**the professional journal
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Improving Undergraduates' Exposure to International Agriculture through Experiential Learning¹

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Abstract

Research shows that students in colleges of agriculture lack knowledge in global agricultural policies, practices, products, peoples and culture. Yet, as future agriculturists, students need to learn how global issues may impact their lives, the stability of our nation and have economic impact world-wide. To address this issue, an undergraduate course focused on world hunger and developing nations was revised to reflect current global agricultural issues as defined by both international agriculture professionals and the students, themselves. In order to provide the best alternative to an experience abroad, experiential learning methods were incorporated into the course. Students responded positively to the course activities but were less enthusiastic about reflection practices. Overall, students believed they improved their global competence from experiences in the course.

Introduction

For the past two generations North American media sources have provided ample information and images about world events and conflicts. The advent of the Internet has served to increase the speed at which we receive news from across the planet, giving us access to text and images of people around the world and exhibiting the current reality that we live in a globally interconnected society in which people and ideas from the world are connected via digital text and images (Friedman, 2005). As educators, it is important that we have an awareness of these events and understand how they impact our lives and the lives of our students. To do this it is beneficial to understand different cultures

in other parts of the world and to respect these cultures. As we move forward in the 21st century, agriculturists, businesses organizations will continue to be impacted by international events, making the world seem smaller than it is in reality (Cushner, 1990).

Global impact is especially evident in agriculture where understanding agriculture and international issues is increasingly important for students throughout the world because international markets and trade of agricultural products play an important role to agricultural producers in the U. S. (Watts, 1998; Drabenstott, 1985). Therefore, having *“a better understanding of international agricultural policies, products, people and cultures may help students be better prepared to enter their careers with a global perspective”* (Wingenbach et al., 2003. p. 34). Researchers have stated that students should have a strong familiarity with international trends, especially as they apply to agriculture and to “be aware of global issues and challenges” (Lukefahr, 1999, p. 3106), yet past studies have shown that students in U. S. universities show minimal understanding of people and cultures outside of the United States (Page and Williams, 2001). Despite student beliefs that it is important to have a background in and an understanding of, international issues and other cultures so they may be successful in their careers (Page and Williams, 2001), research indicated undergraduates are less than knowledgeable about international agricultural issues, policies and cultures (Moore et al., 1996; Wingenbach et al., 2003). To help achieve an acceptable knowledge of international issues and how they affect future agriculturalists, “future cur-

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riculum internationalizing thrusts should give greater attention to world agriculture and related issues" (Moore et al., 1996, p. 22).

In 2002, the American Council on Education issued a challenge nationwide to develop global competence in the workforce and citizenry of the United States. This challenge has resulted in movements at universities across the United States increasing requirements and opportunities for students to gain knowledge about international issues. Colleges of agriculture within land-grant universities have been encouraged to incorporate an international dimension into undergraduate programs (Moore et al., 1996) and college of agriculture administrators have shown strong support for internationalizing curricula (Forsberg et al., 2003). Wingenbach et al. (2003) supported internationalizing curricula in general by stating "...formal education can be used in limited ways to increase students' international knowledge by making stronger connections with 'real world' events and classroom discussions of international agricultural issues" (p. 33) thereby teaching students how global events impact agricultural practices in other parts of the world.

According to Lukefahr (1999), the results of an international agriculture course should include a broadening of student attitudes towards international issues. Specifically, students should gain a "higher level of sensitivity to cultural or social values, general roles, basic human rights, biodiversity, environmental conservation," and "livestock production systems" (p. 3108). Putting this recommendation into practice, Oklahoma State University has made a commitment to incorporating an international dimension into the curriculum of all undergraduate students by requiring that all students enroll in a course which includes an international dimension (Oklahoma State University, n.d.). Courses with international dimensions typically fit into one of two groups: 1) Study abroad courses in which the student travels outside of the United States or 2) on-campus courses that have a primary focus on international perspectives as they relate to specific subject matter.

The Constructivist Theory asserts that learning is the development of knowledge through experience (Fosnot, 1996). According to the Cone of Experience, (Dale, 1946, Figure 1) direct, purposeful experiences are the teaching methods which provide the most concrete experiences for student learning, followed by contrived experiences and dramatized experiences. Action focused methods offer students opportunities to take action within subject matter which can, in turn, promote retention and application of concepts taught through the experience (Kendrick, 1996).

Study abroad experiences would be categorized as direct, purposeful experiences for increasing knowledge of global issues. While cultural immersion is the most desirable way for students to gain international experience and universities have worked to make international experience programs more available and affordable for students, out-of-country experiences are still not always feasible. In these instances, students look to on-campus courses to provide the information and experiences they need.

In order to successfully foster knowledge of and true appreciation for, international issues in instances where cultural immersion is not an option, contrived and dramatized experiences would provide the encounters most like an actual international exposure (Dale, 1946.) To achieve the goal of providing on-campus courses suitable for developing global competence, curriculum change is necessary to incorporate true experiential learning opportunities. Experiential learning combines the experience, perception, cognition and behavior (Kolb, 1984) and while experiential learning theories have changed over time the general major pieces have remained the same (Roberts, 2007). A model commonly used in education today is a modified Kolb model adopted by 4-H (4-H, 2009, p. 8). The experiential learning model, displayed in Figure 2, requires participants to do, reflect and apply, by taking them through five different stages. In order to develop suitable learning activities to substitute for the real experience of cultural immersion, proper time and attention must be dedicated to each of the five stages: do, share, process, generalize and apply (4-H, 2009). Using the experiential learning model, along with the suggestions for experiences closest to the direct experience of international travel, it could be possible to develop student global competence through an on-campus course.

The purpose of this study was to determine how to best provide a suitable on-campus alternative to agricultural study-abroad experiences. The specific objectives were to:

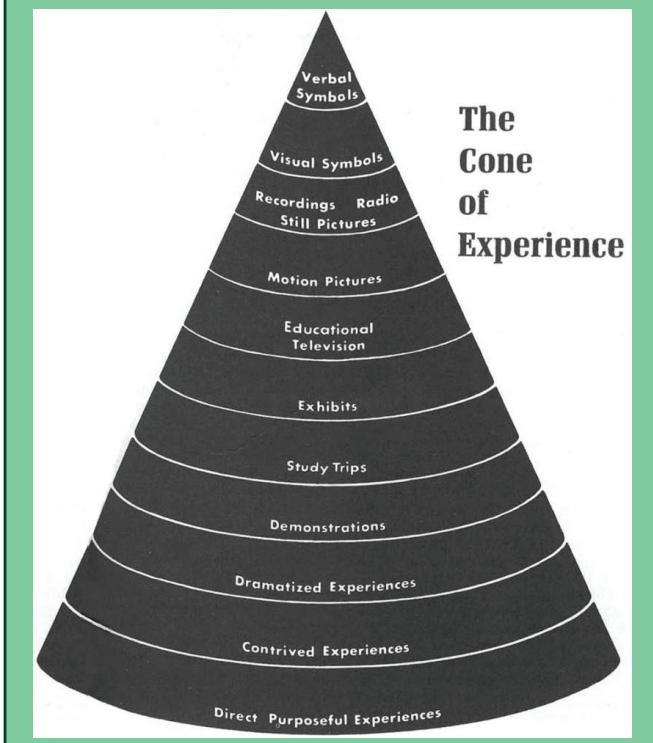
1. Determine necessary components of a general international agriculture course
2. Implement experiential learning activities into coursework
3. Solicit student feedback on individual course components

Methods

To accomplish the study objectives, naturalistic inquiry qualitative methods, as identified by Lincoln and Guba (1985) were employed. Naturalistic inquiry involves three phases; 1) orientation and overview, 2) focused exploration and 3) confirmation and closure.

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Figure 1. Dale's Cone of Experience (Dale, 1969, p. 107)
Edgar Dale's classification of audio-visual teaching methods starting with concrete methods on the bottom and moving toward more abstract methods.

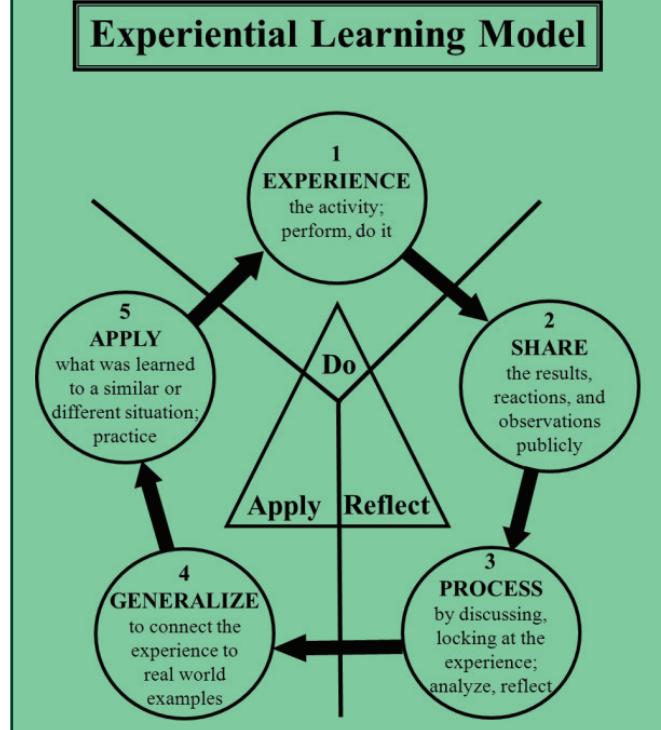


Each phase coincides with an objective of this study for the overall accomplishment of the development of an international agriculture course designed to improve global competence in undergraduate students.

To address the first objective, a document analysis was conducted with current literature, course materials and cross-curricular syllabi to detect curriculum deficiencies and determine what research existed to guide the necessary revisions. In addition, student input was garnered through the use of the buzz sessions technique (Newcomb et al., 1993; Brahm and Kleiner, 1996). Qualitative methodology was implemented by using the constant comparative technique (Lincoln and Guba, 1985) to evaluate data found in the literature as well as student data from the buzz sessions. Objective two was achieved through incorporation of experiential learning activities into the course, including case studies, simulations and current events research followed by reflection activities, to guide students through the experiential learning model repeatedly throughout the semester.

Finally, to accomplish the third objective, students were surveyed at the end of the course to determine their perceptions of the success and importance of course activities. Data were tabulated to determine frequency of student responses regarding specific course components. In addition, student feedback from formal

Figure 2. The Experiential Learning Model from 4-H Essential Elements p. 8. The experiential learning model indicates the steps that must occur for learners to retain concepts taught through experience and apply it to future situations.



course evaluations and unsolicited student comments were also recorded.

The first objective of this study involved a thorough document analysis. Current course syllabi from university courses claiming an international component were included along with course descriptions, objectives and syllabi from international agriculture courses at other universities and previous research on incorporation of international agriculture into education offerings. Extensive lists of course objectives and potential topics were developed from all source materials. Once developed, the lists were condensed to eliminate redundancy. The lists were further reduced by eliminating those objectives and topics covered in and better suited to, other courses offered at the university; the intent being to provide an introduction to international agriculture that could encourage more in-depth future study by interested students.

With initial course objectives developed through document support, the next step was to implement the first experiential learning activity of the course. During the initial class meeting the problem solving method of instruction was employed through the introduction of buzz sessions (Newcomb et al., 1993; Brahm and Kleiner, 1996). Successful implementation of the problem solving method must start with 1) accounting for student wants, needs, interests and aspiration, 2) determination of students' prior knowledge and 3)

developing relevance of the problem to students' lives (Newcomb et al., 1993). To accomplish this, students were divided into small groups where they elected a recorder and took 10 minutes to discuss the question of what knowledge is needed to be considered well versed in international agriculture. Students compiled lists of topics that met their wants, needs and interests, as well as built upon their prior knowledge. At the end of the group discussion time, the class as a whole discussed the groups' findings and developed a comprehensive list of topics necessary for true knowledge of international agriculture.

The results of the buzz sessions were analyzed using the constant comparative technique and compared with the topics and objectives listed developed from the literature (Lincoln and Guba, 1985). Student interest overlapped with literature recommendations for most topics with the addition of agricultural education systems. The list resulting from the combination of ideas was finalized into the following course objectives:

- Explain the importance of agriculture throughout history
- Explain the roles of institutions, foundations and agencies serving agriculture and agricultural research in developing countries
- Identify the characteristics, issues and problems concerning agriculture programs in developing countries
- Analyze and compare selected farm types, sizes and production practices in other nations
- Explain selected aspects of international trade and its impact on American agriculture and the U.S. economy
- Describe the impact of culture in agricultural development
- Describe the U.S. agricultural education system and its impact in international development through agricultural research and Extension

The rest of the semester-long course was dedicated to the selected objectives. Activities were planned to allow students to interact with the topics in ways that followed the experiential learning model. Several teaching methods were employed including inquiry learning, guest speakers, case studies, current events research and interactive simulations. For each class event, students were required to "Do" the activity prior to class in the case of reading case studies, researching current events and completing simulations or during the first class of the week in the event of guest speakers. The remaining weekly class meetings were then dedicated to the "Reflect" stage of experiential learning. Both group and

personal reflection are important activities and necessary for true internalization of new knowledge. Students participated in large and small group discussions, journaled and wrote reflection papers regarding topics covered. Guided reflection questions required students to address the impact of each topic on their own life and/or future. While the "Apply" step was experienced throughout the semester as the course topics build on each other, the grand "Apply" activity occurred with the development, completion and presentation of a final group project revolving around a specific agricultural issue presently occurring in a country of the students' choice.

End of course feedback was solicited from student participants about the course components. Students indicated their thoughts on whether components; 1) should continue to be a part of the course, 2) should be discontinued, or 3) new components should be implemented. Frequencies were tabulated for each component mentioned in student responses (Table 1).

Results and Discussion

Findings of this study indicate that when developing an introductory international agriculture course, current student opinions about topics that will meet their wants, needs and interests closely mirror what past literature claims are necessary topics for developing global com-

Table 1 Frequencies of Student Statements about Class Activities

Statement	Frequency of student statements ^a		
	Continue	Discontinue	Implement
Guest speakers	17	6	
Final group project	17	2	
Reflection papers	4	9	
Homework that prepares students for exams			11
More teaching (i.e. lectures) from the instructor			8
Study guides			6
In-class group activities			5

^aBecause questions were open-ended, student answers varied for each question and not all students responded to all questions, therefore the frequency sums for each statement will be different.

petence in undergraduate students (Bruening and Shao, 1995). Students' interests tended to reflect their particular college majors. Students interested in careers in Extension wanted to learn about similar programs in other countries. Students majoring in agricultural education desired to learn about education systems abroad. Effort was made to accommodate the specific interests of the students in the overall objectives of the course.

During the experiences of the course, students responded positively to the activities associated with the "Do" portion of experiential learning. The "Reflect" portion received mixed reactions. Students enjoyed group reflection activities, but were critical about the individual reflections involving journaling and

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completing reflection papers. The final "Apply" activity was well received and students' perceptions of their own global competence indicated growth over the course of the semester.

Summary

As the need for global competence continues to increase, it is important to offer college students opportunities to develop their knowledge and understanding of global issues. As many of the issues of developing nations involve agriculture, colleges of agriculture should capitalize on the opportunity to draw in students from other disciplines for unique and quality experiences. Classes should be continually updated to reflect current events in agriculture world-wide and instructors should incorporate experiential learning activities in each class meeting.

Student feedback indicates that activities which fit in the more concrete sections of The Cone of Experience (Dale, 1969) and represent the "Do" portion of the Experiential Learning Model, are popular. While this course incorporated several "Do" activities that students completed on their own, students indicated they would like to experience activities as part of a group. Cooperative learning activities have proven increase student achievement which could lead to improved global competence (Slavin, 1991). In future semesters, cooperative learning activities should be incorporated as part of the experience portion of the course. Examples might include a whole-class service learning project or a simulated developing-country visit experience such as is offered by a visit to Heifer International's Global Village.

Experiential learning encompasses a variety of teaching methods. Future research should focus on determining which teaching methods result in the greatest increase in student knowledge of global agriculture. In addition, incorporation of the global competence aptitude assessment (Hunter, 2004; Hunter et al., 2012) would provide a more accurate measure of student growth over the course of the semester rather than student perceptions. It is recommended that students participate in the assessment prior to and at the end of the course to gauge change in their global competence.

Developing an international awareness in our students is important to their success in the global marketplace and as global citizens. By introducing students to international concepts and creating experiences that expand their thinking, we help to prepare students for successful careers in an ever-changing world.

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A Service Learning Approach to Community Engagement in a Study Abroad Design Course in Córdoba, Mexico

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Abstract

A community engagement study abroad course was conducted during the summer 2011 including landscape design and landscape architecture students from NC State University (NCSU) and students from the architecture school from the University of Veracruz, Córdoba (UVC), Mexico. Student reflections and a survey administered at the end of the course were used to evaluate students' perceptions of teaching strategies, affective learning and professional development. Negligible differences were found in student responses between undergraduate and graduate students and male and female students. Differences in responses to some questions were observed between NCSU and UVC students with UVC students ranking experiences slightly higher than NCSU. Students valued the participatory and group activities highest among the teaching strategies. Development of affective learning was observed by the reported increased sense of connection with each other's culture. Students reported their ability to apply community design process improved at the completion of the course and the value of applying their new professional skills in the real world was voiced in student's responses. This article explored and documented the impact of the course and provided an example by which to promote, develop and improve study abroad service learning courses in community engagement.

Introduction

Study abroad design studio courses offer students a valuable experience in which they gain skills that support their ability to work in today's diverse world. Fischer (2009) stated that the number of students who study outside their home countries is projected to grow

from three million in 2009 to eight million by 2025 and short-term study in exotic locations, internships, service projects and other variations on study abroad are increasingly common. Myers et al. (2010) reported that international study positively impacted overall intellectual development of design students and more specifically, students' development as designers. Study abroad courses grapple with a variety of ongoing challenges and opportunities such as the varying levels of bilingual proficiencies in the class and adaptation to the stresses of the unfamiliar aspects these courses such as home-stays.

Community engagement is an essential part of the design process that allows all participants to identify critical themes and design issues specific to the people and place. The nature of community engagement was described by Sanoff (2010) as "*a movement that cuts across traditional professional boundaries and cultures and whose roots lie in the idea of a participatory democracy so that all involved learn participatory skills and can effectively play a part in the making of the decisions that affect them.*" In a study of design education, Boyer and Mitgang (1996) found that 22% of students polled regretted not having learned how to deal better with people. Consequently, skills gained by students participating in community engagement courses are essential for them to be able to provide services to people and communities. Moreover, this interaction becomes the means by which community participants exercise their civic responsibility, Sanoff (2010).

Student learning is affected by the "real world" character of a service learning engagement studio course. Weimer (2002) explained that learning should

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be defined as a qualitative change in a person's way of seeing, experiencing, understanding and conceptualizing something in the real world. This definition values hands-on work with a real community in a study abroad studio setting. Service learning study abroad courses in design require students to develop proposals based on their interaction with community members in a real world that was previously foreign to them.

Bose (2007) asserted that the design studio is an ideal educational setting for critical inquiry. It includes the use of the design process that shares many of the hallmarks of critical inquiry including: goal directed problem solving, the ability to separate meaningful information from non-meaningful information and evaluation of possible solutions. Design students are trained to inventory, listen openly, analyze and communicate faithfully what they have discovered. The studio is a place that simulates a mentor/apprentice relationship in which students take responsibility for their learning experience during the progression of the course. Therefore, a study abroad community design studio provides a unique setting to explore and evaluate student critical inquiry.

The objective of this study is to measure the impact the five week community engagement studio course had on students relative to their impressions of teaching strategies, affective learning and professional development.

Methods

The community design study abroad studio course was conducted in Córdoba, Mexico at the University of Veracruz, Córdoba (UVC) College of Architecture. Córdoba, Mexico, founded in 1618, is one and a half hour drive due west of the port city of Veracruz and four hours east of Mexico City. It is a traditional gridded-street colonial city found in the hilly area near the volcano of Orizaba, the third highest mountain in North America. The current population is approximately 180,000. Main economic activities include agriculture and ranching, with sugar milling and coffee processing as the main industries. Weather is humid and mild with average daily temperatures of about 20° C (68° F). Vehicular and pedestrian experiences in the historic core of Córdoba have not evolved to accommodate the scale or complexity of today's needs. Córdoba is addressing the same problems in place making and safe vibrant experiences in their urban environments as many other cities around the world.

Four landscape design and landscape architecture students from North Carolina State University (NCSU) traveled in June 2011 to the UVC and were joined in the course by seven architecture UVC students. Males made up 63% of the group and females 36%. NCSU students

had traveled abroad and none of the UVC students had been abroad prior to this course. Students included seven (64%) graduate students and four (36%) undergraduate students. There were no language prerequisites for the course.

Instructors included J.T. Sherk, Assistant Professor, NCSU Horticultural Science, H. Sanoff, Professor Emeritus from the College of Design at NCSU and R. Garzón, co-Professor and architect with a master of urban design, with support from Dr. Beatriz Rodríguez, Vice-rector at the Orizaba-Córdoba Region UVC. Students and faculty from NCSU were paired with classmates from UVC and accommodated by home-stay room and board. The course met Monday through Friday, from 10:00 am to 1:00pm and 3:00pm to 6:00pm. Field trips were organized on weekends to visit cultural sites that included Mexico City, the Teotihuacán pyramids, Oaxaca and some nearby towns showcasing relevant urban projects.

The primary goal was training students in the development of design techniques that empower communities. The course in community design involved service learning design projects. Students addressed urban design while assessing cultural/social and spatial needs of the community members. Students were provided articles to read on community engagement prior to departure. Then, during the first three days in Cordoba, Professor Sanoff conducted an engagement "boot camp." The objective was to teach students to develop "environmental games" or workshop activities that would help community members focus on a set of critical themes relating to their unique place and then enabling community residents to make informed choices for the improvement of their environment. (Sanoff, 1979)

Seven potential project sites were identified by the instructors. Students were asked to develop a list of criteria to be used to evaluate each site for selection. Students used a democratic process voicing all opinions to identify criteria for assessment, evaluate sites and then narrow the list to two projects. Tratados de Córdoba Boulevard leading to Quinto Centenario Park and the Pitayitas Neighborhood were selected as class projects. First, students were divided into two groups. One group addressed the entrance to the city, the Tratados de Córdoba Boulevard with the Quinto Centenario Park found at the end of the boulevard. The other group worked on the Pitayitas Neighborhood, an urban zone that is part of the historic core of Córdoba. Second, students prepared community workshops by developing workshop activities and preparing a site inventory and analysis presentation. Third, students delivered invitations to the workshops directly to local residents providing an opportunity for students to make direct connections with the community.

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Students worked with community members during the workshop to gather the information necessary to identify needs and concerns using activities that students had devised. These activities afforded the facilitator/students and community participants to take part in discussions and presentations, sharing ideas and questions in order to deepen their understanding of themselves and each other and to reach consensus.

Students evaluated the community's input and used it to identify important critical issues that became program themes for their designs. The Pitayitas Neighborhood group identified a need to improve connectivity by addressing streetscapes, including the need for comfortable, safe sidewalks. Also, they identified the need to improve public and vacant spaces and address the zone's visual appearance. The Tratados de Córdoba Boulevard and Quinto Centenario Park group focused their community input into a program that addressed the need for a welcoming, intriguing, improved environment that conveyed a sense of the city's history and distinctiveness. Particular topics identified were safety, comfort, traffic control and civic identity. Students addressed common urban issues in the design proposals that occur globally such as safe and comfortable sidewalks, urban green areas, successful urban tree plantings, storm water management strategies, parking and transit by bicycle and motor vehicle, art and development areas. This process revealed a hierarchy of important topics that reflected the community and designer's values.

Students prepared an hour-long bilingual presentation for the stakeholders, including workshop participants from the community, leaders in the public and private sectors, local news media and the academic community at the UVC School of Architecture. The presentations included programmatic proposals that reflected the community workshop input and conceptual designs that were represented in plans, sections and sketches that were presented as possible future scenarios.

Methods of Assessment

Students' perspectives on teaching methods and experiences were assessed using a survey. Students were asked to rate questions using a five-level scale with 1 as a lowest value and 5 as a highest value. Also, students were asked to provide answers to open-ended questions. Students were asked to rank their understanding of how their skills transformed by the end of the course. Survey questions were organized into categories addressing teaching strategies, professional development and their sense of connection to the place and people (Table 1).

Survey results were analyzed using SAS (Version 9 Statistical Analysis System). Differences between the student groups (NCSU and UVC) were compared using a general linear model procedure and statistical differences tested at $P = 0.05$. Answers to open-ended questions were organized into categories and descriptive statistics including frequency counts and means were compiled. Students were asked to write a reflection narrative on their experiences at the conclusion of the course. Writings were examined for evidence of impact to their development.

Table 1. Student Survey Questions

Teaching Strategies:

1. Rate the list of teaching strategies (Table 2)*
2. List which one of the experiences in the course you found most interesting (Table 3)
3. List which one of the experiences in the course you found least interesting (Table 4)
4. List any topics you would like to learn more about in the course (Table 5)
5. Rate the course assignments*

Professional Development:

1. Rate your confidence in developing design games relative to how they helped community focus on a particular set of concepts (Table 6)*
2. Rate your confidence in developing design games relative to how they helped community to discover an appreciation for their personal similarities and differences*
3. Rate how the course contributed to your professional development *
4. Rate how your new skills helped you relate to real world issues addressed in the course (Table 7)*

Connections:

1. Rate how the process of community design and service learning enhanced your understanding of social and cultural characteristics*
2. Rate your sense of empathy and/or connection with the community (Table 8)*
3. List how unique characteristics deepened your understanding and helped to make connections to the place and the people

Transformation:

1. Rate your satisfaction in your ability to apply the community design process before and after the course (Table 9)*

*When asked to rate survey question, students scored answers using a five-level

Results

Students rated participatory and group activities higher than site visits and weekend trips and rated the final presentation as the highest, but base plan development as the lowest (Table 2). UVC students rated some strategies significantly higher than the NCSU students, specifically in-class work time, verbal feedback reviews, course lectures, assignments, visiting lecturers, pin-up reviews and base plan development.

Students were asked which experiences they found most interesting. Students most often mentioned group work in this open-ended question, as the most interesting followed by reviews, community workshops and weekend travel. It is interesting to note that the "language challenge" was mentioned in 5% of the experiences as the most interesting part of the course (Table 3).

Students were asked which experiences they found least interesting. The most frequent response was "nothing" (Table 4). Producing PowerPoint® presentations was ranked as the second least interesting activity. It is notable that the "language challenge" was mentioned as a least interesting part in 8% of the experiences listed.

Students were asked to list other topics that they would have liked to learn more about. Mentioned most frequently was an interest in learning more about the local planting material (40%) (Table 5). Also, mentioned at lower frequencies, were local urban design, topography, vehicular circulation and local history amongst others.

Workshop activities, inventory and analysis, design development, final report and the blog were all rated highly from (4.0) to (4.6) in the evaluation of the course exercises. The blog was regarded as the highest (4.6) and final report as the lowest (4.0). UVC students rated course exercises higher than the NCSU students with significant differences occurring in the categories of journal writing and design development (data not shown).

Survey responses indicated that all students reported greater confidence in applying the community design process at the completion of the course. Students rated how the course contributed to their professional development with, a unanimous high rating of (5.0) (data not shown).

Students were asked about their confidence in the validity of how the workshop activities helped the community focus on a set of particular concepts (Table 6). The average response (4.7), suggests that there was a high confidence in the effectiveness of the workshop activities, with little difference between any of the groups. Similarly, all students rated highly (4.5) their confidence that the design activities helped the community discover an appreciation for their personal differences and similarities (Table 6). Further, in the open ended question most of the students mentioned (46%) that the proposed design projects were based on community input. They also mentioned (31%) that community engagement was integral to the design process (data not shown).

Students were asked if the course activities and development of new skills (Table 7) would help them relate to real world issues. They claimed that learning more of each other's language and translating the design program into physical expressions were the top new skills mentioned (17%) amongst others (Table 7).

Students' responses illustrate evidence of their connections with the community, the place and their classmates. Students rated how the process of community design and service learning enhanced their understanding of social/cultural characteristics of the community. The cultural/social characteristics that enhanced the student's experiences were rated highly with urban design at (4.5), art (4.4), cuisine (4.3), music (4.0) and dance with the lowest rating at (3.8). No significant differences were noted between student groups (data not shown).

All students rated the effect of the course on their sense of empathy or connection to the community as

being high (4.8). Students were asked in the open-ended questions, to list things that helped them feel more connected to the place and the people. Visiting different sites and site analysis were mentioned in 38% of the comments as helping students deepen connections. Also developing friendships, the community design methodology and community workshops were mentioned as helpful (Table 8).

Students were asked to rate their satisfaction in their ability to apply the community design process before and after the course. Students' average response before the course was low, (1.7). Average rating was much higher for all students (4.6) (Table 9) as a result of participating in this course. There were no significant differences between the student groups.

Discussion

Students studying abroad report positive experiences. Nassar (2004) reported that students who participated in a three week study abroad landscape program responded as being very satisfied and perceived the experience to have had a very positive impact on their future academic

Table 2. Mean Scores from Student Survey Evaluation of the Teaching Strategies Completed at the End of the Course

	Average ^z	UVC	NCSU	UVC vs. NCSU ^y
Site visits	4.8	5	4.5	NS
Weekend trips	4.8	4.6	5	NS
Final presentation	4.8	5	4.5	NS
In-class work time	4.6	5	4	*
Group work	4.5	4.9	3.8	NS
Verbal feedback as reviews	4.5	5	3.5	*
Community workshops	4.4	4.7	3.8	NS
Course lectures	4.3	4.7	3.5	*
Field discussions	4.2	4.4	3.8	NS
Assignments	4.2	4.9	3	*
Visiting lecturers	4	4.6	3	*
Pin up reviews	3.9	4.9	2.3	*
Base plan development	3.2	4.1	1.5	*

^zAverage rating score for University of Veracruz Cordoba (UVC) and NC State University (NCSU) students using a 1-5 scale (with 1 as lowest and 5 as highest)

^yNS = no significant difference; * signifies significant difference at P= 0.05

Table 3. Percentage of Course Experiences Students Found Most Interesting

Most interesting experiences mentioned by students	Percentage of Times ^z
Group work	25%
Reviews	10%
Community workshops	10%
Interactions with community	10%
Weekend trips	10%
Development of new friendships	5%
Site visits	5%
Design development in short time	5%
Proposal graphics	5%
Presentation	5%
Development of design activities	5%
Language challenge	5%

^zValues are the average times categories were mentioned and expressed as a percentage of the total number of comments

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Table 4. Percentage of Course Experiences Students Found Least Interesting

Least interesting experiences mentioned by students	Percentage of Times ^z
Nothing	31%
PowerPoint® production	15%
Workshop design activities	8%
Chaos before presentation	8%
How group reached consensus	8%
Lack of effort by some members	8%
Language challenge	8%

^zValues are the average times categories were mentioned and expressed as a percentage of the total number of comments

Table 5. Results to: List Any Topics You Would Like to Learn More about in the Course

	Percentage of Times ^z
Plant material/aesthetic	40%
Local urban design	15%
Topography	10%
Vehicular circulation	10%
Local history	10%
Local decision making process	5%
Cultural values	5%
Local design process	5%

^zValues are the average times categories were mentioned and expressed as a percentage of the total number of comments

Table 6. Mean Scores from Student Survey Evaluating Their Confidence in How the Workshop Activities Helped Community

	Average ^z
Helped community focus on a particular set of concepts	4.7
Helped to discover an appreciation for their personal similarities and differences	4.5

1-5 scale (1 as lowest and 5 as highest)

^zAverage rating score for University of Veracruz Cordoba (UVC) and NC State University.

endeavors, personal growth, global understanding and awareness. Similarly, students in this five-week Córdoba program described positive outcomes. The service learning, community engagement, studio-setting aspects of the Córdoba study abroad program allowed for evaluations that explicitly addressed the opinions of students' perceptions of teaching strategies, affective learning and professional and personal development in a global environment.

Relative to teaching strategies, students highly valued assignments that were completed in groups. In addition, the exercises that promoted self - directed learning that required an open attitude should be incorporated into course as provided in the following students' narratives. These demonstrate how these approaches were perceived:

“...freedom of this trip also made for a really wonderful time, we were basically allowed to choose our projects and choose the way we learned about our surroundings and the way we integrated them.”

“I very much enjoyed defining the selection criteria, also as a course and then using the criteria to whittle down our choice”

Table 7. Percentage of New Skills Addressed in the Course That Would Help the Students Relate to Real World Issues

	Percentage of Times ^z
Learning each other's language	17%
Translating course into physical form	17%
Using engagement methodology	11%
Interaction in workshop	11%
Potential of improvement of people's lives	11%
Organize the most important issues for community	11%
AutoCAD Skills	11%
Flexibility	6%
Asking the right questions	6%

^zValues are the average times categories were mentioned and expressed as a percentage of the total number of comments

Table 8. Percentage of Unique Characteristics That Helped the Students Deepen Their Understanding and to Make Connections to Place and the People

	Percentage of Times ^z
Sites visits & analysis	38%
Developing friendships	25%
Community design methodology	19%
Community workshops	13%
Traveling to other sites	6%

^zValues are the average times categories were mentioned and expressed as a percentage of the total number of comments

Table 9. Mean Scores from Student Survey Evaluation of Their Satisfaction in Their Ability to Apply Community Design Process Completed at the End of the Course

	Average ^z
before	1.7
after	4.6

1-5 scale (1 as lowest and 5 as highest)

^zAverage rating score for University of Veracruz Cordoba (UVC) and NC State University. There were no differences in responses based on nationality, class rank or gender; therefore, data were pooled.

“I thought yes, I am going to “dance” this summer by taking advantage of the opportunities and challenges placed in my path, in whatever forms they may take.”

Concerning empathy and connections, results demonstrate that activities developing the capacity to recognize the feelings experienced by others help to promote growth in student's affective learning realm. Activities should be designed to strengthen their ability to contrast different values, resolve conflicts between them and create unique new value systems. An excerpt from a student's reflection narrative demonstrated new awareness and connection:

“...am dumbfounded to find out just how much my Mexican family enjoys each other's company... I veer on the edge of jealousy at times because of how beautiful this showcase of humanity is... It has been a pleasure to have witnessed this ceremony and speculate on the implications it has for daily life here in Córdoba... They have shown us things no guidebook would be able to explain; in fact it did not, since there was barely a mention of this town in books”

Student responses confirmed that the community engagement process in the studio setting represented real-world practices. This experience afforded students the

opportunity to deepen and broaden their development as professionals. Workshops with the community enriched students' connection to the local people and they experienced hands-on applications of skills introduced in the course. Excerpts from some of the student's narratives illustrated growth toward the professional world and increasing professional global awareness:

"The process was short and sweet it felt like we got thrown off the design games cliff but it turns out we had a parachute of knowledge to gently guide us to the ground..."

"It (community workshop) allowed us to cut through some design decisions and it felt like the community helped speed up the design process."

"...engagement with community seemed to give them (community) a place in this new developing world that is quickly changing around them"

"In the end our team managed to come out with a great product that I am especially happy with and I am proud to have been a part of this experience."

The approach of "improvise, adapt and overcome" became the course motto. One of the challenges and opportunities was the language barrier as reflected in the students' responses. This provided a challenge to be overcome through a gradual transformation. Students in both groups felt unable to participate initially, but varying levels of bilingual skills were used to contribute to bridging information between the primarily Spanish speaking UVC students and the primarily English speaking NCSU students. This attitude was essential to the success of information transfer amongst students as well as between students and the community. Extensive use of "Google® Translate," a free web-based translation service and drawings became tools for communication.

Both the UVC and the NCSU students claimed to have transformed during the course at many levels. These are reflection narratives describing ability to revise judgments and change behavior in light of new evidence resulting in valuing of people and place:

"... I would just need to dance to a different melody, one I wasn't quite used to. I had nothing to lose and I only needed to follow the steps of my teachers...It was at this (a) gathering, when I truly felt comfortable in this new country, culture and with new friends, when I completely broke out of my shell...In order to have a worthwhile and full experience, I had to simply put myself out there."

"How do you tell someone they need to plant street trees when their house straight pipes sewage into a river? But here I must regroup and dig deep to find my role as a designer. I know that I cannot solve all the problems. I must avoid becoming overwhelmed by the problems and try to understand what I can ..."

Survey results and student narratives illustrate how goals for the course were met. They revealed evidence of students' capacity to be open to transformation, confirming an increase in empathy and connection and demonstrating an enhancement in development of students toward global professionalism. Concurrently, this evaluation helped to expose areas for potential improvement to the course such as including more information on urban design in particular using plant material as design elements. Students' responses revealed many similarities and some slight differences in the way each group of students perceived the value of the course. There were significant differences in responses to some questions between NCSU and UVC students with UVC students ranking experiences slightly higher than NCSU. This interesting result is worthy of further examination. However, the study abroad course provided students and faculty the ability to gain insights into cross cultural issues and increased their cultural literacy. Although the sample size was small, the differences observed in this study provide guidance for further evaluation of these themes.

Summary

This study provided the opportunity to examine how a collaborative, study abroad setting influenced the learning experience and attempted to provide evidence that supports the concept that it is necessary to create ever improved cross-cultural service learning academic exchange experiences. These academic experiences offer a laboratory for exploring and developing ways for a study abroad community engagement studio to enrich students' development. The educational and professional value of a meaningful, socially active study abroad learning experience lies in the opportunity for participants to grow in the context of a real-world experience that promotes personal and interpersonal discovery. Participating students exhibited the ability to overcome barriers and step out of comfort zones throughout this study abroad course. They demonstrated expansion in maturity in Bloom's affective learning domains (Bloom et al., 1973) as they learned to be receptive to a new place, responsive throughout the design process, expressive of their democratic valuing of the people and place while making connections compassionately in a new global context. Finally, students internalized experiences by exhibiting a transformation of gained understanding. Such experiences present students with the opportunity to become sensitive to cultures and people different from their own and to apply relevant critical skills that convey the importance of the community's distinctive voice in confronting their unique issues. Students participating in this course developed a deeper understanding of their

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own transformation and a more expansive view of the global condition and the role their discipline plays.

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Traditionally Under-Represented Students' Perceptions of a Study Abroad Experience¹

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Abstract

Research has indicated that traditionally under-represented undergraduate students in the food and agricultural sciences continue to be grossly under-represented in the pool of undergraduate students with study abroad experiences. The current study is an assessment of participants' perceptions of an international experience for students from the College of Agricultural Sciences and Natural Resources (CASNR) at the University of Tennessee (UT). This program included a semester long for-credit academic coursework, culminating in a two-week study abroad experience. Participants completed a pre-departure survey and a subsequent post-reentry assessment. Analysis of the data indicated that there was significant perceived growth ($P = 001$) in cultural awareness, knowledge of global affairs, interpersonal competence, personal attributes and knowledge of the focal country. Qualitative data corroborated those findings and clarified the data regarding perceptions of empowerment outcomes. The study highlights a particular group of students (i.e., traditionally under-represented) in the agricultural sciences that could benefit from targeted efforts to enhance their opportunities for participation in experiential learning abroad and professional preparation for the globalized world. Limitations of the study such as concerns inherent in short-term study-abroad programs and of self-assessments are noted.

Introduction

Increasingly, institutions of higher learning are recognizing the value of an international experience to students' preparation for the globalized workplace.

This is primarily because graduates with cross-cultural experiences are in great demand as employers seek employees who have a global perspective and can think critically (Tillman, 2011). The Global Competence report (2005) asserted that given the global nature of America's challenges, a deep understanding of the diverse cultures of the world is an essential component of the 21st century education of the nation's students. That report emphasized that broader global awareness among the nation's future leaders will lead to more effective U.S. foreign policy, greater national security and economic resilience in an increasingly competitive world. Undoubtedly, one of the best ways to achieve those competencies is through traveling abroad (Tillman, 2011). However, the overwhelming majority of the U.S. population has never traveled overseas, with only 20% of the population holding a passport. Not surprisingly then, less than two percent of the nation's undergraduate students participate in travel abroad programs and only 1.4% of food and agriculture majors study abroad (IIE-Institute of International Education, 2011).

The value of intercultural competency in today's global climate has been well documented (IIE, 2011) and an international experience has been widely acknowledged as the best way of developing global and intercultural competencies (Gutierrez et al., 2009; Obst et al., 2007; Tillman, 2011). Students who study abroad exhibit personal and professional attributes that are critical to success in the 21st century workplace. These include autonomy, open-mindedness, willingness to embrace challenges, tolerance for ambiguity and the ability to cope with diverse problems and situations

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(Akridge, 2007; Sutton and Rubin, 2010; Tillman, 2011). Furthermore, a study abroad experience has been deemed invaluable in acquiring overall academic competences and cross-cultural proficiency. A seminal study (Sutton and Rubin, 2010) found that, compared to the control group, undergraduate students who participated in study abroad programs had significantly higher graduation rates and grade point averages and demonstrate better overall cognitive, psychosocial and cultural competencies. The enhanced academic performance and graduation rates were especially profound among at-risk and non-white students.

Beyond the individual benefits, an academic experience abroad has been recognized as an economic and strategic imperative for the United States. For example, the United States Senate (Senate Resolution 308, 2005), in recognition of the importance of study abroad programs, indicated that contemporary global challenges demand intercultural competence and performance. The resolution noted that the security, stability and economic vitality of the United States depended largely on the ability of its citizenry to communicate, negotiate and do business in an increasing global economy and interconnected world. More recently, Hillary Rodham Clinton, the current U.S. Secretary of State, reiterated that thought process when she noted that for the U.S. to maintain leadership in an ever-changing world, it must have a globally educated citizenry. Therefore, she appealed to all American students to commit to expanding their worldview by studying in another country. Further, she implored administrators of American colleges and universities to support study abroad experiences for students (U.S. Department of State, 2011). The broad purpose of the current study was to assess the relative value of a short-term experience abroad program for traditionally under-represented (e.g., racial/ethnic minorities, first generation college attendee, low socioeconomic) students in the food and agricultural sciences at the University of Tennessee. The program was an outcome of the enhanced academic plan of The University of Tennessee and the College of Agricultural Sciences and Natural Resources (CASNR) to increase the infusion of international and intercultural learning throughout the undergraduate curriculum. The university has identified key international/intercultural goals for undergraduate student learning and articulated strategies to achieve those goals, including redirecting existing resources and making new allocations to study abroad programs. The program was aimed at enhancing participants' individual development, international understanding and global competence.

Profile of Students Studying Abroad

Despite the dramatic growth in study abroad programs over the last decade, the numbers of students who study abroad remains low and the profile of students in those programs, their preferred destinations and the fields of study have remained constant (IIE, 2011). For example, students who study abroad continue to be overwhelmingly white (80%) and female (64%) and the majority (55%) picks Western Europe (primarily United Kingdom, Italy, Spain, France) as their destination choice. In 2009-2010, African American students constituted 4.7% of students who studied abroad and students majoring in agriculture and agriculture-related disciplines represented only 1.4% (IIE, 2011). These dynamics have led to calls for institutions of higher learning to dramatically increase the diversity of participants, fields of study and destinations of study abroad. For example, Akridge (2007) bemoaned the fact that despite the great achievements made in various areas of higher education over the last 25 years, progress toward increasing diversity in study abroad programs remains dismal. To this end, Akridge advised institutions of higher learning to find ways to increase the numbers of students who participate in international educational experiences, consistent with the broadening diversity of the population of the United States.

Barriers to Studying Abroad

Although various reasons have been forwarded for the low participation of traditionally under-represented groups in study abroad programs, lack of funds has been cited as the single most significant barrier (Akridge, 2007; Obst et al., 2007). Hence, "money" has been deemed the most critical element in improving diversity in study abroad programs. Less affluent families often do not know the value of an international experience or have the financial resources to support their offspring on such an expensive venture (Brux and Fry, 2010). Furthermore, financially disadvantaged students, invariably, cannot forego work study or other employment to participate (Brux and Fry, 2010; Obst et al., 2007). Besides, institutional hurdles such as curriculum rigidities and lack of academic credit for the activity at many colleges and universities have also been cited as obstacles for students (Brux and Fry, 2010).

Institutions, too, have cited financial difficulty as a key hindrance to their ability to send students abroad. For example, Gutierrez et al. (2009) investigated the capacity of U.S. institutions to increase student participation in study abroad programs. Responding institutions overwhelmingly (89%) cited insufficient funds as the biggest hindrance and 83% highlighted the need for more study abroad scholarship opportunities. Other hindrances reported in the study were lack of

faculty leadership and commitment to study abroad and parental resistance due to concerns for their students' safety and security abroad.

Arguably, the disparities and challenges noted above become especially critical for students from under-represented groups. Their dismally low participation in international experiences implies that undergraduates from those backgrounds might be missing out on vital opportunities to increase their capacity for successful leadership in the 21st century (Obst et al., 2007; Tillman, 2011). The current program addressed key barriers by (1) instituting a short term program (2) providing financial support for students (3) awarding academic credit for the course and (4) alleviating potential family concerns about their children's safety by having faculty lead the program. We are unaware of any study that has targeted under-represented groups to examine learning outcomes through study abroad. For this program, the term under-represented referred to students who were first generation college attendees and/or from diverse racial, ethnic and low income backgrounds.

Program Description and Methods

The program spanned five years, the first four of which was funded primarily by a grant from the United States Department of Agriculture (USDA) to provide scholarships for under-represented students majoring in the agricultural and related sciences. In the fifth year (i.e., the end of the grant period), the university and college subsidized students' cost for the program. To be selected for the program, students had to be in good academic standing as stipulated by the university. Selected participants were required to enroll in a senior level semester-long 3-hour credit course, ANR 491: International Experience in Agriculture and Natural Resources, which involved an in-depth study of the country for the experience abroad that particular year. Topics of study included the focal country's history, cultural norms, government, economy and health and safety issues. Matters within the framework of globalization of agricultural business, markets and trade and other transnational affairs were also studied.

The course culminated in a two-week in-country tour of the focal country during the university's mini-term. Since many students take summer classes, going abroad over the university's mini-term lessened the chance of academic disruption which could potentially delay some students' graduation. Activities for the in-country experiences were arranged in collaboration with either a local university or Ministry of Agriculture. Although the in-country experiences varied by location, typical activities included attending lectures (at local universities, field research stations and/or government

ministries) on agricultural, economic and other issues pertinent to the particular country in the global context. Other activities included students attending and participating in cultural events and interacting with local peers, farmers and entrepreneurs. Ground transportation was by chartered bus; lodging included a combination of local university dormitories and commercial hotels.

The current study examined the self-perceived educational value of an international experience to a group of traditionally under-represented CASNR students. The study assessed the potential influence of the experience as a function of gender and ethnicity. Based on the literature regarding the value of such experiences on other groups (Sutton and Rubin, 2010), our central prediction was that students would report greater competency in all domains assessed from pre- to post-test.

Participants were 53 agricultural and natural resources majors (38 females, 36 Caucasians, 16 African Americans and 1 other). Forty nine of the students were funded to varying degrees depending on their level of financial need. The experience abroad activities took place in three world regions (Africa, Asia and the Caribbean) that are traditionally not targeted by students for study abroad and included five different countries (Ghana (N = 10), Jamaica (N = 24), Thailand and Vietnam (this trip included two countries for three weeks) (N = 11) and Lesotho (N = 8).

Prior to departure, each student completed an 18 item pre-departure objective paper and pencil survey that was developed particularly for the study. Two months after completion of the respective in-country tour, students completed a corresponding post-study assessment and a subjective evaluation of their in-country experiences. Survey items were set on a four-point Likert type scale on which participants indicated the degree to which they agreed (1 = strongly disagree, 2 = disagree, 3 = agree and 4 = strongly agree) with statements about themselves and their competencies. The items fitted conceptually onto five subscales: (1) intercultural awareness (four items) (e.g., I have a natural curiosity to learn about cultures other than my own; I am aware of how my own values might affect others); (2) (four items) knowledge of global affairs (e.g., I have a good understanding of the role of the U.S. and other countries in the world; I am aware of the need for personal responsibility in enhancing the global environment) (3) interpersonal competence (six items) (e.g., I possess the ability to cope with unfamiliar situations; I appreciate differences in people; (4) personal attributes (four items) (e.g., I have strong leadership skills; I am good at problem solving) and (5) knowledge of the focal country (one item) "I understand a lot about the people of (name of country). In addition,

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participants responded to an open ended item about their impression of the study abroad program: "Comment on the overall value of the tour to you." Each trip abroad was supervised by at least two of the five participating faculty members.

During the in-country tour, students kept a journal of their activities and experiences. In addition, the accompanying faculty and students met each evening to discuss, analyze, reflect and evaluate the particular day's activities. Upon their return to the U.S., at the beginning of the fall semester, students, as a group, prepared and delivered a presentation about the program to other students, faculty and staff and administrators in the CASNR. Students in the first four years of the program received a grade of satisfactory/no credit for the 3-credit hour course. However, in the fifth year the grading system was modified so that participants received a letter grade (A to F). The study was deemed exempt under federal regulations 45CFR46.101(b) (U.S. Department of Health and Human Services, 2009).

Results and Discussion

We used repeated t-test analyses to examine mean change in each of the five domains measured by the pre- and post-test data and qualitative data to assess participants' evaluation of the overall value of the study tour to their personal development. As shown in Table 1, participants indicated greater overall competency on all scales after the study abroad experience than before. For example, on the post-test, students indicated an increased ability to cope with unfamiliar situations, appreciate differences in people and interact more effectively with people from diverse cultural backgrounds. They also perceived themselves to be more autonomous and open-minded, less fearful of traveling overseas, felt better able to solve problems and had a greater understanding of global issues reported a better knowledge of the focal country post- than pre-tour. We conducted multivariate analysis of variance (MANOVA) to examine whether there were significant mean differences based on ethnicity, gender, or country of tour. No differences on any scales were detected as a function of gender, ethnicity, or country. Further, we used students' written subjective feedback about the study abroad experience as supporting evidence for the quantitative data. The data provided a better understanding of and gave deeper meaning to the quantitative data.

The following section provides information, in students' own words, about the international experience. These are in response to the request "Comment on the overall value of the study tour to you." One hundred percent of the participants noted the positive value of the experience to them personally, academically and

socially/culturally. However, the general nature of the comments precluded the separation of the responses into specific themes. For example, several themes were subsumed in the responses (often in a single sentence); therefore, separation of participants' perceptions of the overall experience into distinct domains would detract from the robustness of the assessments. Therefore, a minute sample of participants' assessments of the trip overall is presented verbatim.

"The value of the tour is immeasurable. I have become a new person because of the experiences provided on the study tour. The tour shall form a basis for me to grow even more in the future."

"The tour has changed me....it showed me how narrow my perspective on the world is and how much I want to broaden that. Trip of a lifetime! No class could ever teach as much in a semester as we learned in two weeks."

"The trip was amazing. I would have never thought I would be able to or would even want to go out of my comfort zone and travel to Africa. I am glad I did.... Not only did I gain education and experience but also some great friends. This trip has opened me up to all the other possibilities out there for me to experience...."

"The trip was the most amazing thing I have ever experienced.... Being pre-professional made me somewhat closed minded to this experience but I wouldn't change any of it. I plan to study abroad again...."

"I wish more undergrads and grad students would have opportunities like this. I feel it was an indispensable part of my education."

"This is one of the best experiences of my college career."

"This was an amazing experience for me. It gave me more confidence in myself.... It made me step out of my comfort zone and I find myself talking to people more than I usually do."

"This was the experience of a lifetime. I would encourage everyone to study abroad if possible. It was a great learning experience to be in another culture in a different country. I learned so much about myself, the other students and the people of (name of country)."

As predicted, participants in the program reported significantly greater overall competency after participation, compared to pre-participation, on all domains of development examined. Their post study abroad perceived enhanced levels of cultural awareness, cross-cultural skills, world knowledge and personal development post study abroad, concurred with the findings of past studies regarding the importance of an international experience to undergraduate education (IIE, 2011; Sutton and Rubin, 2010) and with Tillman's (2011) supposition that a study abroad experience, regardless of its

duration, can potentially provide students with a competitive edge in the job seeking process. However, notwithstanding participants' favorable evaluation of the program, it should be noted that this study did not have a control group for comparison. Therefore, we were unable to ascertain whether there would be differences in perceived outcomes between this sample and a more privileged group. Also, because the study is based on participants' self-assessment and there was no actual measurement of changes in cultural awareness, cross-cultural skills, world knowledge and personal development, we cannot ascertain whether their perceived learning translated into actual knowledge and competence. Therefore, their perceptions might not be reality. Nevertheless, the findings point to the academic and intrinsic value, albeit perceived, of an international experience to the college experience of traditionally under-represented students. The findings may serve to bolster calls for institutions of higher education to make study abroad a strategic imperative for undergraduate education, especially for students of limited financial means. According to the NAFSA (2006) report, colleges and universities must make a special effort "*to facilitate access to study abroad for students with varying levels of financial means; study abroad should not be available only to those who can easily afford it*" (p. 9).

As positively impactful as participants' perception of the experiential learning was, we are cognizant of the fact that the impact might have been greater had the sojourn abroad been longer or if students had gone abroad on their own. The program was faculty led, tightly scripted and the abroad portion lasted only two weeks (three weeks in one instance). Zamastil-Vandrova (2005) in delineating the drawbacks of short-term faculty led study abroad noted that participants are not exposed to "real" culture shock because they are, for the most part, sheltered from the everyday inconveniences and frustrations that the local people endure. Also, such programs do not allow for cultural and language immersion. Furthermore, participants' almost total dependence on program leaders limits the amount of independence and autonomy that they would have gained on a longer program and one undertaken independently. However, although those limitations were true for the current sample, participants were able to observe firsthand many of the daily hassles and hardships (e.g., poverty) people of developing countries encounter. It is our belief that an experiential learning opportunity in a developing country may have made the experience more valuable for the participants than a study experience in a developed society. This is in light of conventional thought that graduates of food and agricultural sciences disciplines will be expected to strategize and create solutions to daunting 21st century

challenges such as world hunger, poverty and food insecurity.

Table 1. Descriptive Data for Pretest and Posttest (N = 53)

Subscale	Pretest		Posttest	
	M	SD	M	SD
Cultural Awareness	3.34	.32	3.65	.33***
Knowledge of global affairs	2.75	.49	3.71	.35***
Interpersonal Competence	2.97	.41	3.57	.34***
Personal attributes	3.00	.37	3.57	.34***
Knowledge of focal country	2.02	.67	3.94	.25***
Total	3.15	.25	3.66	.27***

***P < 001

Note: Higher scores equal more favorable agreement with the statement.

Summary

The study examined the perceived value of a short-term study abroad program to a group of traditionally under-represented students majoring in the food and agricultural sciences. The study highlighted a particular group of students that could benefit from targeted efforts to enhance participation in experiential learning abroad and preparation for competing in the global economy. The findings may have implications for institutions of higher learning and colleges of agricultural sciences, as well as for the students themselves. The fact that participants perceived the international experience as valuable to their personal and academic growth may suggest, as past pertinent studies and other relevant literature have indicated, that institutions of higher learning make study abroad programs a strategic imperative for the undergraduate education. This dynamic is particularly relevant to under-represented groups and agricultural sciences disciplines. Without such experiences, those individuals may be further disadvantaged by being short-changed on vital competencies and skills necessary for success in an increasingly internationalized world.

Finally, despite the drawbacks of short-term programs (8 weeks or less) such as the one described here, they play an important role in increasing the involvement of students in international educational experiences and an even greater role in diversifying the range of under-represented groups in study abroad programs. Accordingly, they "*offer flexible international study opportunities to students who might otherwise be unable to participate in traditional programs due to financial, academic, personal, or other limitations*" (Obst et al., 2007, p. 15).

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Going Global: Study Abroad Intentions of Agriculture and Natural Resource Students

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Abstract

Study abroad programs affiliated with colleges and universities all over the world work at developing cultural awareness in students, as well as preparing them to grow academically and personally. While these experiences are encouraged, not all students choose to participate, especially, it appears, students in agriculture and natural resources. This study was designed to search for a better understanding as to why some students choose to participate while others do not, using the theory of planned behavior (TPB). The TPB states a person's behavioral intention is determined by three factors: attitude toward the behavior; degree of social pressure felt to perform or not perform the behavior; and the degree of control over performing the behavior (Ajzen, 1991). As expected, the TPB predictors were highly correlated with intentions. Multiple regression results support the TPB and direct measures of the theory variables predicted 54% of intent to study abroad. The results show the TPB can improve understanding of a student's intention to study abroad and the findings can be used to develop and market study abroad programs in which students are likely to participate.

Introduction

Agriculture is a global enterprise. Consequently, developing leaders who can cope with the mounting complexities of operating in such an expanding world market is becoming increasingly important. *“Arguably, an understanding of agriculture’s history and current economic, social and environmental significance, both domestically and internationally, is important for all Americans”* (Doerfert, 2011, p. 11). As students graduate and move into the workforce, international experience will be necessary if they are to help the United States remain competitive in a global market (Moore et

al., 2009). One possible way to achieve this global understanding is through study abroad experiences. Study abroad programs have become the most visible and popular international activity to enrich and broaden students' global competency (Zhai and Scheer, 2002).

For university students, academic study abroad programs may take a variety of forms. Students may participate in fully integrated programs and spend a semester abroad enrolled in an institution in a host country (Dwyer, 2004), while some universities offer semester-long hybrid programs or short-term faculty-led programs (Anderson et al., 2005; Engle and Engle, 2003). Regardless of program length, study abroad programs can have a significant positive impact on the lives of participants (Dwyer, 2004).

Not only are study abroad experiences highly valued by employers (Fischer, 2010), but researchers have demonstrated positive effects that such experiences have on students. Students believe that an international experience will improve their competitiveness in the job marketplace (Briers et al., 2010). The impacts of an international experience stretch beyond the areas of academic success and career development and are seen as being profoundly influential on personal development and intercultural awareness (Dwyer, 2004). Studies have shown that students who study abroad develop a deeper understanding and respect for global issues (Carlson et al., 1990; Kitsantas, 2004), more favorable attitudes toward other cultures (Anderson et al., 2006; Kitsantas, 2004), stronger intercultural communication skills (Sutton and Rubin, 2004), improved personal and professional self-image (Cushner and Mahon, 2002) and better foreign language skills (DuFon and Churchill, 2006; Sutton and Rubin, 2004). In addition, surveys of former study abroad participants consistently

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indicate they believe the experience improved their self-confidence, ability to handle ambiguity, insight into their own value systems and overall maturity (Carlson et al., 1990). In light of the known benefits and the increasing importance of an international study experience, by encouraging participation in study abroad opportunities, agricultural educators can promote “actively and emotionally engaged in learning” (Doerfert, 2011, p. 21) by their students.

Most universities offer a range of study abroad programs to a multitude of countries that provide students with the opportunity to travel and explore the world, gain experience and earn credits toward completing their degrees (Dwyer, 2004) and universities should continually examine the organization, scope and sequence of their international experiences (Briers et al., 2010). Much research has been done on the benefits that study abroad participation has on college students (Acker and Scanes, 2000; Briers et al., 2010; Bruening and Frick, 2004; Dwyer, 2004; Moore et al., 2002). However, little is known about what influences students to choose to study abroad. This is certainly the case within agriculture and natural resources. And although interest in study abroad programs has never been higher among American college students, as few as 1.5% of college students travel overseas to study every year (Williamson, 2010).

In addition to cost and timing considerations, various other factors may influence students’ decisions regarding program choice, including their motivations and their attitude toward the program. Other studies have shown that students have positive perceptions regarding the value of study abroad (Briers et al., 2010); however, there is a shortage of research about how attitudes are formed and what factors play important roles in forming attitude toward the participation in study abroad programs (Nyaupane et al., 2008).

By determining why agriculture and natural resource students choose a study abroad experience and by identifying what factors deter participation in these endeavors, colleges can effectively develop and market study abroad programs in which students will likely participate. This research presents the results of a study performed to analyze the factors which impact the attitude toward and likelihood of agriculture and natural students at Texas Tech University to participate in a study abroad program. The Theory of Planned Behavior (Ajzen, 1991; Ajzen and Fishbein, 1980) acted as the theoretical foundation to provide an increase in the understanding of the factors influencing students’ attitudes toward their choice to study abroad and the subsequent behaviors. This study aligns with research priority four of the American Association for Agricultural

Education to develop “meaningful, engaged learning in all environments” (Doerfert, 2011, p. 21).

Methods and Procedures

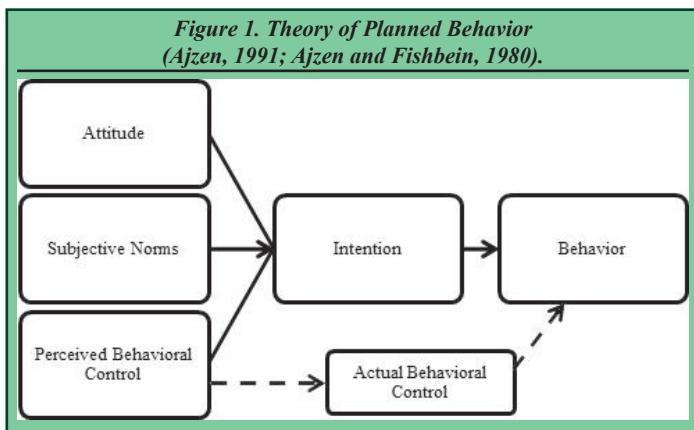
Theoretical Framework

According to the Theory of Planned Behavior (see Figure 1), a person’s performance of a specified behavior is determined by that person’s intention to perform the behavior. Behavioral intention is depicted as a function of three basic determinants: attitude toward performing the behavior, subjective norms and perceived control (Ajzen, 1991; Ajzen and Fishbein, 1980).

Attitude is the overall belief about something—the evaluative opinion the individual holds in regard to the behavior in question (Ajzen, 1991). The attitude is the degree to which performance of the behavior is positively or negatively valued. Attitudes toward a particular behavior are influenced by a combination of two related factors: affective and instrumental beliefs. The term affective beliefs refers to emotions and drives felt by the prospect of performing a behavior. This is in contrast to instrumental beliefs, which refers to a more cognitive consideration of the extent to which performing a behavior would be advantageous (Breckler and Wiggins, 1989).

Subjective norms are the beliefs that one holds about the normative expectations of others, such as parents, friends, classmates and teachers. According to the TPB, individuals have a sense or belief about whether or not these individuals and groups would approve or disapprove of the behavior. Measures of subjective norms consists of perceived pressure, approval or disapproval from the influential people in one’s life, the pressure to engage in the given behavior and the individual’s motivation to comply (Ajzen, 1991).

Perceived behavioral control is the belief about the perceived ease or difficulty in engaging in the behavior (Ajzen, 1991), as well as any previous experiences with carrying out the specific behavior and any anticipated hindrances. The influence of perceived behavioral control depends on self-efficacy (confidence in one’s own ability to perform the behavior) and perceived controllability if the behavior (Armitage and Conner, 2001). Perceived behavioral control plays an important part in the theory of planned behavior (Ajzen, 1991). In fact, the Theory of Planned Behavior differs from the theory of reasoned action in its addition of perceived behavioral control. Although Ajzen (1991) has suggested that the link between behavior and behavioral control outlined in the model should be between behavior and actual behavioral control rather than perceived behavioral control, the difficulty of assessing actual control has led to the use of perceived control as a proxy.



Behavioral intention is considered as a mediating factor in the association between attitude, subjective norm and perceived behavioral control on the one hand and behavior on the other hand. The stronger an individual intends to perform a behavior, the greater the likelihood the individual will engage in the behavior. The theory of planned behavior can be useful in designing strategies to help people to adopt behaviors, such as studying abroad.

Purpose and Objectives

This research examined the power of the Theory of Planned Behavior (TPB) to predict study abroad intentions of agriculture and natural resource students. The specific objectives were:

1. To identify participants' attitudes toward studying abroad.
2. To identify participants' subjective norms about studying abroad.
3. To identify participants' perceived behavioral control of studying abroad.
4. To identify participants' intention to study abroad.
5. To predict participants' intention to study abroad using attitudes, subjective norms and perceived behavioral control.

Participants

The target population of this study was undergraduates in the College of Agricultural Sciences and Natural Resources at Texas Tech University during the fall of 2011. Of the 1,537 questionnaires distributed, 465 were returned, yielding a response rate of 33.05%. Sheehan (2001) found that the mean response rate for internet surveys was 35% in 1998, 27% in 1999 and 24% in 2000. Sheehan also found that between 1986 and 2000, internet survey response rates continually declined and concluded that response rates for internet surveys were likely to decline further still in the future.

After the exclusion of those who opted out and submitted incomplete questionnaires, the number of valid responses was 402. The majority of participants

($n = 349$, 87.0%) were "white," followed by Hispanics ($n = 40$, 10%). Four participants (1.0%) indicated they were Black, not of Hispanic origin. Of the other ethnic groups in this study, three participants (.7%) each were American Native/Alaskan Native and Asian and one (.2%) each was Native Hawaiian/Pacific Islander and Non-Resident Alien. No single grade level dominated the participants' classification. Almost one-third were seniors ($n = 123$, 30.7%), closely followed by juniors ($n = 112$, 27.9%), sophomores ($n = 87$, 21.7%) and freshman ($n = 77$, 19.2%). Two participants (.5%) reported they had received a bachelor's degree. Age of participants ranged from 17 years to 54 years, with a mean age of 21.07 ($SD = 4.67$). Collectively, respondents to this survey had an average estimated overall GPA of 3.30 ($SD = .48$).

Instrument

A researcher developed, web-based instrument was used to collect data about the participants' intention to study abroad. To predict whether the participants intended to study abroad, the questionnaire explored whether the participants were in favor of studying abroad (attitude), how much the participants feel social pressure to do it (subjective norm) and whether the participants feel in control of their participation (perceived behavioral control).

This study employed direct measures of the TPB constructs. Direct questions about engaging/not engaging in a behavior may be methodologically superior to the use of scenarios (Randall, 1989), as they tap what the respondent will do in reality over what the respondent would do in a hypothetical situation.

Attitude. To directly assess attitude toward studying abroad, six items were used. Using 5-point scales, respondents were asked whether they felt participating in a study abroad program was easy/difficult, good/bad, valuable/worthless, pleasant/unpleasant, possible/impossible and interesting/boring. To compute construct of attitude toward studying abroad, the six measures were averaged to create a single scale.

Subjective norms. To directly assess the respondent's subjective norm toward studying abroad, respondents were asked three questions using a 5-point Likert scale: first, whether they agreed that "Most of the students in CASNR with whom I am acquainted have or plan to study abroad"; second, "When it comes to study abroad, how much do you want to be like your friends?"; and third, how true is it that "It is expected that I participate in a study abroad program." Mean responses to the three questions were calculated to give an overall subjective norm score.

Perceived behavioral control. Perceived behavioral control was directly measured by assessing the participants' self-efficacy and their beliefs about the controllability of the study abroad behavior. Seven items, using a 5-point Likert scale, measured self-efficacy and controllability. Self-efficacy was assessed by asking participants to report how confident they were that they could study abroad if they wanted. Participants also indicated how strongly they agreed they would have difficulty due to language barriers, costs, financial assistance, inflexible curricular requirements and personal safety. Controllability was assessed by asking participants to report how much they agreed that "Whether I participate in a study abroad program is completely up to me." These seven items were averaged to arrive at an overall measure of perceived behavioral control.

Intention. Behavioral intentions were measured by three items. Each item was measured on a 5-point Likert scale. Participants indicated how much "I have previously considered participating in a study abroad program." They also indicated whether they agreed that "Participating in a study abroad program is something that interests me," and whether "I intend to participate in a study abroad program."

Validity and Reliability. An expert panel reviewed the questionnaire to establish content and face validity. Using pilot data obtained from surveys completed by undergraduates majoring in agriculture and natural resources at five peer institutions, Cronbach alpha values were computed for each construct to assess the reliability of survey items. Cronbach alpha scores for attitude, subjective norms, perceived behavioral control and intent were .87, .67, .55 and .86 respectively. Nunnally (1962) suggested that reliability estimates of .50 to .60 might be high enough in the early stages of research.

Data Collection and Analysis

Participants were surveyed during the fall of 2011 using a modified version of Dillman, Smyth and Christian's (2009) tailored design method for internet, mail and mixed-mode surveys. The design and methods of this study were deemed exempt by the Texas Tech University Institutional Review Board.

This study followed the methodological procedures proposed by Francis et al. (2004) for constructing and analyzing a TPB questionnaire. Statistical analysis was carried out using SPSS for Windows, version 18.0. Standard descriptive statistics were used to analyze the demographic characteristics of participants, as well as measures of attitude, subjective norms, perceived behavioral control and intention. For objective five, regression analyses were performed to test the relationships between constructs in the theory of planned

behavior. Intention was regressed on attitude toward performing the behavior, subjective norms and perceived behavioral control. Davis' (1971) conventions were used to label correlation relationships between variables.

Results

Objective 1: Attitudes

Seven direct measures of attitude toward studying abroad were gauged and then used to calculate an overall attitude construct score. The overall attitude construct had a mean score of 3.89 (SD = .74), on a scale from 1 to 5 with higher scores indicating a more positive attitude toward studying abroad (see Table 1). While the students' attitude was favorable overall, individual instrumental items (whether the behavior achieves something: interesting/boring, valuable /worthless, good/bad) were more positive than the attitudes about affective items (how it feels to perform the behavior: pleasant/unpleasant, possible/impossible, easy/difficult).

Objective 2: Subjective Norms

Subjective norm is the influence that peer pressure has on shaping intent studying abroad. To measure subjective norms, a composite variable was created by averaging the scores of three sources of pressure: perceived intention of peers, desire to be like peers and perceived expectations by others (see Table 2). Each item was rated on a scale of 1 to 5 where high scores reflect greater social pressure to study abroad. The mean of the overall subjective norm ($M = 2.66$, $SD = .77$) indicates that on average, the students were only somewhat influenced by other people in their decision to study abroad.

Objective 3: Perceived Behavioral Control

Behavioral controls are the real or perceived logistical hindrances that shape students' intent to study abroad. The perceived behavioral control construct combined seven items related to potential difficulties, the student's self-efficacy and their beliefs about the controllability of the behavior. High scores reflect a greater level of control over participating in a study abroad program or, looked at in another way, lower scores indicated more perceived difficulty in controlling those factors.

On average, students felt the least control over potential difficulty due to costs ($M = 2.30$, $SD = 1.14$). Additionally, students agreed that inflexible degree requirements were difficult to control and could prevent their participation in a study abroad program. Worry over their personal safety ($M = 3.55$, $SD = 1.08$) was not seen as a difficulty compared to the other barriers. Results showed the students did not feel strongly one way or another about their control over each of the other potential difficulties in this study (see Table 3), since

“3” indicated neutrality on the scale of 1 to 5. Students agreed that they felt slightly confidant they could study abroad if they wanted ($M = 3.79$, $SD = 1.13$) and that the decision to study abroad was up to them ($M = 3.25$, $SD = 1.09$).

Objective 4: Intentions

Table 4 shows the mean values for the items in the intention construct. Analysis revealed that on average, student’s overall intent was slightly positive ($M = 3.68$, $SD = 1.04$). In general, students agreed they did have interest in studying abroad ($M = 4.15$, $SD = 1.02$). At the same time, they were fairly neutral about their previous consideration ($M = 3.65$, $SD = 1.31$) and their explicit intention to study abroad ($M = 3.24$, $SD = 1.25$).

Objective 5: Prediction

In order to determine if the three TPC constructs could predict intent to study abroad, a multiple linear regression was conducted. The multiple regression analysis method relies on the assumption of normality within the data. Statistical tests for skew and kurtosis did not indicate that the normality assumption was violated. A regression analysis was run using the following model:

$$\text{Intention} = \text{Attitude} + \text{Perceived Behavioral Control} + \text{Subjective Norms}$$

Table 5 presents the regression model results for student intentions to study abroad. The overall $F(3, 395)$ value for the model was 154.72 with a p value smaller than .001. Both R^2 and adjusted R^2 for this model were .54, indicating that approximately 54% of the variance in intent to study abroad in the sample can be accounted for by the linear combination of TPB constructs. The results were consistent with the theory predictions that students’ personal attitude, subjective norm and perceived behavioral control influence their intentions to studying abroad. The correlations between the independent variables (Attitude, Perceived Behavioral Control and Subjective Norms) and the dependent variable (Intention) were also examined. Each of the predictor variables had a significant ($p < .05$), substantial, positive correlation with intent to study abroad. Analysis also showed that a combination of attitude toward the behavior, subjective norms and perceived behavioral control significantly explained student’s intent to study abroad. Attitude ($\beta = .53$, $p < 0.01$) had the strongest influence on behavior intention, followed by subjective norms ($\beta = .25$, $p < 0.01$).

Discussion and Summary

This study contributes to the academic literature on the theory of planned behavior, as well as study abroad programs as an

academic program. As expected, attitudes, subjective norms and perceived behavioral control all significantly predicted intentions to study abroad, providing support for the original TPB model. That is, students with positive attitudes toward studying abroad, who believed that others would approve of the behavior and who believed they had control over carrying out the behavior were more likely to intend to participate in a study abroad program.

The findings showed that the students’ attitude toward studying abroad was the most important linear predictor of their intention to study abroad. Students who place value on the benefits and see worth in the

Table 1. Attitudes toward Participating in a Study Abroad Program

Item	M	SD
Interesting/Boring	4.54	.80
Valuable/Worthless	4.32	.87
Good/Bad	4.27	.82
Pleasant/Unpleasant	4.09	.90
Possible/Impossible	3.34	1.22
Easy/Difficult	2.86	1.13
Overall Attitude	3.89	.74

Note. Scale of items ranges from 1= negative attitude to 5= positive attitude.

Table 2. Subjective Norms about Participating in a Study Abroad Program

Item	M	SD
Perceived Intention of Peers	3.05	1.04
Perceived Expectations by Others	2.69	1.19
Desire to be Like Peers	2.26	1.02
Overall Subjective Norms	2.66	.77

Note. Scale of items ranged from 1 to 5, where high scores reflect greater social pressure to study abroad.

Table 3. Perceived Behavioral Control of Participating in a Study Abroad Program

Item	M	SD
Control of difficulty due to:		
Personal Safety Risks	3.55	1.08
Financial Assistance Availability	3.45	.94
Language Barriers	3.14	1.08
Inflexible Curricular Requirements	2.68	1.12
Costs	2.30	1.14
Confidence of Ability	3.79	1.13
Perceived Controllability	3.82	1.09
Overall Perceived Behavioral Control	3.25	.60

Note. Scale of items ranges from 1 to 5, where high scores reflect greater level of control over participating in a study abroad program.

Table 4. Intent to Study Abroad

Item	M	SD
Interest	4.15	1.02
Previous Consideration	3.65	1.31
Intention	3.24	1.25
Overall Intent	3.68	1.04

Note. Scale of items ranges from 1 to 5, where high scores reflect stronger intention to study abroad.

Table 5. Regression Analysis to Explain Intent to Study Abroad

Item	r			β	t	p	R ²	Adjusted R ²
	Intent	Attitude	Subjective Norms					
Attitude	.69*			.53	12.28	.001*		
Subjective Norms	.52*	.46*		.25	6.41	.001*		
Perceived Behavioral Control	.46*	.54*	.33*	.09	2.25	.025*		
Model							.54	.54

Note. * $p < .05$

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experience were more likely to participate. Furthermore, the study found that perceived behavioral control, including self-efficacy and controllability, was a factor influencing interests and subsequent choice goals related to study abroad. Thus, students who have the self-assurance than they can effectively participate in a study abroad program are more likely than are their less confident peers to make such academic decisions. The subjective norms were least important in shaping the decision. This is consistent with Armitage and Conner's (2001) findings that several authors have argued it is the weakest component of the TPB. Nevertheless, the positive role played by peers in encouraging study abroad behavior in general is significant in this study. Therefore, the intention to study abroad appears to be a personal choice and, to a lesser degree, influenced by others.

The findings of the current study concur with the theoretical underpinnings of the theory of planned behavior (Ajzen, 1991). This support is largely consistent with previous research examining the application of the theory to general behaviors (Armitage and Conner, 2001). Given that all the direct measures of the theory of planned behavior were highly predictive of study abroad intentions, these findings provide useful information for interventions designed to increase study abroad participation in this population. The results of the present study indicate that targeting students' personal attitudes, elements of internal motivation and control and their perceptions of pressure from others may be useful strategies to increase study abroad participation in agriculture and natural resource students.

This research supports many practical implications for marketing within higher education by professors and student services professionals involved in the development, promotion and outcomes of study abroad programs. Interventions designed to change behavior can be directed at one or more of its determinants: attitudes, subjective norms, or perceptions of behavioral control (Ajzen, n.d.). "Early and consistent messages will help students actualize their plans" (Briers et al., 2010, p.18). First, when promoting study abroad programs directly to students themselves, practitioners should emphasize the benefits of opening new career opportunities, gaining an opportunity to grow and develop as a person and exposure to an interesting and/or fun experience (benefits found by Acker and Scanes, 2000; Bruening and Frick, 2004; Moore et al., 2009; Zhai and Scheer, 2002), since attitude had the strongest relationship to and was the best predictor of intention. Additionally, as the cost of study abroad programs was seen as a potential barrier to participation in available programs, practitioners should ensure that costs are kept low and

that grants, scholarships, or other forms of financial aids are readily available and easy to obtain. Furthermore, a series of persuasive communications, as recommended by Ajzen (n.d.), could be developed to show how a study abroad program could fit into existing curriculum/degree plans. It is important to remember that changing one or two beliefs may not produce a change in intent and a multi-pronged intervention, grounded in the TPB, is likely to produce the desired study abroad behavior in this population.

Although TPB constructs predict behavioral intention, intention may not necessarily lead to actual study abroad behavior. Given the possibility of inconsistency between intention and behavior, it is important to examine both intention and behavior in a single study to fully understand the relationship among the three TPB components, intention and behavior. Thus, future research should be directed toward a longitudinal study involving the actual study abroad behaviors as a major dependent variable.

While the research has potential limitations, given the importance of agriculture worldwide, this research represents an important contribution dialogue related to study abroad in agriculture and natural resources.

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An Experiential Learning Framework for Engaging Learners During Study Abroad Experiences

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Abstract

The purpose of this article is to present a model for engaging learners during study abroad activities based on the literature related to experiential learning and cognition. Such a framework will help educators facilitate learning activities before, during and after an international experience that have positive cognitive and affective impacts on students. The framework was developed through content analysis and synthesis of learning theory and cognitive science literature. It was concluded that cognitive science and contemporary learning theory provide a solid framework to help educators facilitate learning before, during and after an international experience. A model was developed to guide educators through this process. Before an experience, it was concluded that educators should focus on prelection. The authors also concluded that during an experience educators should implement activities for learner reflection. Finally, it was concluded that after a study abroad experience educators should also facilitate reflection activities.

Introduction

Modern agriculturalists no longer have the luxury of hiding behind geo-political borders and ignoring what has been happening on the other side of the world. Recognizing this, many colleges of agriculture have embraced international opportunities for undergraduate students (Brooks, et al., 2006). A recent examination of international activities at United States universities (Green, Luu and Burris, 2008) revealed two key findings: (a) *“The majority of students and faculty expressed support for international activities, but failed to participate in these activities”* (p. viii) and (b) *“While*

the number of participants had increased, only a small portion of undergraduates participated in academic programs abroad and many of those that did had short-term experiences” (p. viii).

The Commission on the Abraham Lincoln Study Abroad Fellowship Program (2005) took a critical look at the current status of study abroad programs in the United States. They proclaimed that *“promoting and democratizing undergraduate study abroad is the next step in the evolution of American higher education”* (p. v). The Commission set the lofty goal of one million students studying abroad annually. They went further to say that a bold new emphasis on study abroad could have the same effect on the United States as the land grant university system and the G.I. Bill.

The Commission on the Abraham Lincoln Study Abroad Fellowship Program’s (2005) charge is being answered. The Association of Public and Land-Grant Universities (APLU, n.d.) established study abroad as one of its major initiatives. Additionally, citing the importance of preparing American college graduates to be global citizens in a post-9/11 world, the United States Congress is in the process of establishing the Senator Paul Simon Study Abroad Foundation. This landmark legislation has been passed by the House of Representatives (H. R. 1469, 2007) and the Senate (S. 473, 2009). The goals of this legislation are within 10 years of the date of the enactment of this ACT:

1. Not less than 1,000,000 undergraduate United States students will study abroad annually for credit;
2. The demographics of study-abroad participation will reflect the demographics of the United States

undergraduate population, including students enrolled in community colleges, minority-serving institutions and institutions serving large numbers of low-income and first-generation students; and

3. An increasing portion of study abroad will take place in nontraditional study abroad destinations, with a substantial portion of such increases taking place in developing countries. (Senator Paul Simon Study Abroad Act of 2009, S. 473, p. 17)

One million students studying abroad annually is an admirable goal that would be substantially above current levels. It will require all academic disciplines to increase their current efforts in establishing study abroad programs and recruiting students to participate. However, as NAFSA's Task Force on Institutional Management of Study Abroad (2008) noted, increasing the number of students is only one part of the equation. The other part is establishing appropriate guidelines to ensure that students receive a quality learning experience.

Colleges of agriculture have embraced study abroad for numerous years. In 2006, students studying agriculture represented .3% of the total student population (FAEIS, 2007; USDE/IES, 2008), but represented 1.4% of the students studying abroad (Institute of International Education, 2009). As a result, numerous researchers in agriculturally related disciplines have provided pragmatic insight into creating meaningful learning experiences, largely based on personal experiences of the faculty and students (Tritz and Martin, 1997; Brooks et al., 2006; Irani et al., 2006; Wingenbach, Chmielewski, Smith et al., 2006; McGowan, 2007). Although helpful, such inquiries do not provide a theoretical framework for conducting study abroad programs and do not fully integrate emerging knowledge of how people learn.

Knowledge of how people learn, based on advances in an understanding of how the brain works, has grown exponentially over the last few decades (Bransford et al., 2000; Zull, 2002). Learning can now be understood from psychological, biological and physiological perspectives, providing insight into the development of impactful learning experiences. Applying this knowledge has been called brain-based learning (Caine and Caine, 1994). The extent to which facilitators of study abroad experiences understand and apply brain-based learning principles is unknown.

Purpose and Methods

The purpose of this article is to present a model for engaging learners during study abroad activities based on experiential learning and cognitive science, while considering cultural sensitivity. Existing empirical and theoretical literature was used as the data for this article. Developing such a model will help educators

facilitate learning activities before, during and after a study abroad experience that have positive cognitive and affective impacts on students and promote positive cultural experiences. The framework was developed through content analysis and synthesis of learning theory, cognitive science literature and cultural sensitivity literature.

Results and Discussion

Synthesizing the literature relevant to engaging learners during study abroad activities led to five emerging themes: (a) activities before the experience; (b) activities during the experience; (c) activities after an experience; (d) learner engagement throughout the experience; and (e) cultural sensitivity. A brief discussion of each theme is presented below and a summarizing model was created to show how each theme relates.

Before an Experience

The period of time before an international experience could appropriately be called prelection (Jones and Bjelland, 2004). This time period is best used as a time for preparing students for learning. Jones and Bjelland posited that prelection will allow students to have the cognitive capacity to reflect in greater depth over their concrete experience and for this reason, prelection should be used as the starting point of an experiential learning endeavor. Prelection experiences and activities increase the *"readiness capacity of students to learn from their experiences, thereby increasing their capacity to reflect upon the concrete experience and increasing the overall learning by the student"* (Jones and Bjelland, 2004, p. 963). The importance of preparing learners for learning has been supported by learning theory for a considerable amount of time (Newcomb et al., 2003). Preparation for learning is also important from a brain physiology standpoint (McLaughlin et al., 2005). Learning occurs as the brain processes information received through the five senses and integrates the new knowledge into existing synaptic networks (Bransford et al., 2000; Zull, 2002). By their very nature, study abroad experiences are sensory rich. By preparing learners in advance, they can be better prepared to interpret the plethora of data and focus on aspects most important for their learning. Additionally, preparing learners in advance can begin to build synaptic networks that can provide the framework for learning throughout the experience.

Prelection class sessions should provide students an opportunity to get to know one another prior to leaving the country (Koernig, 2007). This will help the students feel comfortable with each other and help to promote a positive learning community during the study abroad experience (Lutterman-Aguilar and Gingerich, 2002;

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Koernig, 2007). Koernig presented a list of possible activities that could be used to promote student bonding as well as an introduction to culture. The following activities are suggested by Koernig (2007):

- Student interviews of one (or two) other classmates and an oral introduction of that person to the rest of the class,
- Two- or three -person team oral presentations of one aspect of the culture of the country,
- A discussion of previous experiences traveling or living overseas (p. 212).

An important consideration at this time is the emotional or affective state of the learner. Cognitive science has revealed the crucial role that emotions play in learning (Zull, 2002). Accordingly, educators should make sure students have sufficient logistical details about the experience and its' potential application to reduce anxiety and stress while at the same time increasing excitement and focus. Rodriguez and Roberts (2011) found that some students on study-abroad programs are concerned "with personal safety, food availability and water safety" (p. 23). A study abroad experience can elicit positive and negative emotions in learners, particularly if learners perceive potential danger (Wingenbach et al., 2006). Strong emotions, particularly worries about safety, should not be ignored because the worries and emotions will decrease the students' chances of cognitive learning (Rodriguez and Roberts, 2011). Therefore issues regarding emotions and safety should be addressed prior to the study-abroad program during the preflight activities in an attempt to enhance student learning before the study-abroad and during the study-abroad program (Rodriguez and Roberts, 2011). Advances in the understanding of brain processing have revealed that perceptions of threat can inhibit learning, as the brain shifts to a fight or flight focus (Caine and Caine, 1994; Zull, 2002). Concurringly, learning theory, in the form of Maslow's hierarchy of needs (Maslow, 1943) has long supported that people will focus on survival until that need is satisfied.

Other important factors to consider before an experience are the learner's motivation and existing knowledge. Experiential learning theory and cognitive science recognize that all new knowledge builds off of existing knowledge (Dewey, 1938; Kolb, 1984; Bransford et al., 2000; Zull, 2002; McLaughlin, 2005). A central precept in Dewey's experiential learning theory were the concepts of interaction and continuity. Interaction refers to the interplay between the inner being of the learner and the outer being of the environment. Continuity refers to the interplay between past, present and future experiences. Examining interaction and continuity together emphasize the importance of learners' previous

experience, knowledge and perceptions. No learner is a clean slate. Accordingly, educators should conduct activities to learn about students' previous experiences, knowledge and existing perceptions (Rodriguez and Roberts, 2011). Then, building from learner motivation and knowledge, educators and learners can jointly develop goals for the experience that build from previous knowledge and appropriately stretch the learner (Vygotsky, 1978), thus providing an experience at the appropriate content level (McLaughlin et al., 2005).

Identifying preexisting knowledge should not be isolated to technical content. Educators should focus on the students existing cultural awareness and strive to provide learning activities that enhance the students' cultural awareness and understanding (Rodriguez and Roberts, 2011). In addition, students should reflect over their own communities and analyze how their own communities have shaped their lives and contributed to their personal values (Luterman-Aguilar and Gingerich, 2002). Sparrow (1993) stated, "*self-awareness is crucial to intercultural learning. Our predispositions, expectations and reactions affect our perceptions. Our perceptions affect our judgments, how we solve problems and make decisions and ultimately how we are perceived and trusted by others*" (p.155).

During an Experience

Experiential learning theory contends that learning occurs by transforming experience through reflection (Dewey, 1938; Kolb, 1984; Roberts, 2006). A key feature of these theories is that learning is a cyclical process by where new experiences build from previous experiences. Cognitive science also recognizes that learning is a continuous process of forming new synapses and then building and breaking synaptic connections between existing neurons (Bransford et al., 2000; Zull, 2002).

The importance of reflecting on experiences (Kolb, 1984; Roberts, 2006) is widely accepted. However, with an overabundance of culturally and cognitively complex situations that occur in a study abroad experience, learners (especially novices) may need guided reflection as they process these experiences (McLaughlin et al., 2005). Luterman-Aguilar and Gingerich (2002) purported that critical analysis of experience is a necessary component of experiential learning and it is a part of the reflection process. Experiential learning is often associated with problem-based education. In problem-based education it is "impossible to solve a problem without first analyzing and understanding the nature of it" (Luterman-Aguilar and Gingerich, 2002, p. 55). However, Luterman-Aguilar and Gingerich purported that students cannot be expected to effectively analyze and reflect an experience on their own, they must be taught how to properly

reflect in an in-depth manner. Reflection should include an exploration of the students' feelings and emotions, an analysis of their own behaviors and why they responded that particular manner and an in-depth analysis of the cognitive process/content that has been covered. Goldstone and Wilensky (2008) purported that learners can make sense of complex systems through guided interpretation of elements of the phenomena. However, Meade et al., (2009) discovered that experts found collaborative debriefing beneficial, while novices found it distracting. Accordingly, educators should provide multiple opportunities for individual and group reflection with sufficient guidance to allow learners to reflect on aspects of the experience that are relevant to the goals they established during prelection.

The use of individual assignments should be used to encourage and allow for individual reflection (Lutterman-Aguilar and Gingerich, 2002). An assignment could be in the form of a paper, in which the student selects an experience, describes the experience and analyzes his or her own role in the experience (Lutterman-Aguilar and Gingerich, 2002). Upon completion of the individualized assignment/reflection, the facilitator should use the assignment to guide a reflective group discussion (Lutterman-Aguilar and Gingerich, 2002). According to Freire (2000) critical analysis and reflection should not be left solely to the individual. Instead, critical analysis and reflection should expand and develop based on collective communication (Freire, 2000; Lutterman-Aguilar and Gingerich, 2002).

The time during a study abroad experience is often characterized by a plethora of rich experiences. In such a stimulating learning environment, it is important to recognize that the brain consciously and unconsciously processes copious amounts of information received through the senses (Zull, 2002). Sweller (1988) proposed the Cognitive Load theory as a way of looking at brain processing. Sweller recognized that learning takes place through the creation of schemas that represent long term memory and that learning corresponds with a change in the brain schema. However, Sweller cautioned that too much information could actually overload working memory and thus impede learning in a way that prevents the development of schema. Fortunately, educators can help facilitate learning in these situations. In addition to preparing learners before an experience, educators can help learners focus on key aspects of the experience that are most relevant to achieving learning objectives.

Depending on the structure of a study abroad experience, learners may be given greater responsibility for their learning, allowing learners to construct their own meaning from the experience. However, as self-regulated learning theory (Schunk and Zimmerman,

1994; 1998) suggests, taking responsibility for one's own learning is a skill that must be developed. Cognitive theory supports that humans are naturally driven to learn, but that novice learners differ from expert learners in the way that they learn (Caine and Caine, 1994; Bransford et al., 2000; Zull, 2002).

An additional strategy to enhance learning during a study abroad experience is to facilitate inductive activities that require learners to use inquiry and problem-solving skills. Such an approach is consistent with the brain's natural search for patterns and schema development (Caine and Caine, 1994; Bransford et al., 2000; Zull, 2002; Gureckis and Goldstone, 2008). As previously mentioned, problem based education fits neatly into the experiential learning framework and will allow the student practice and enhance their critical analysis and reflection skills (Lutterman-Aguilar and Gingerich, 2002). This strategy will also foster learner responsibility for acquisition and application of knowledge, which is consistent with Self-Regulated Learning (Schunk and Zimmerman, 1994). The problem based learning approach allows the student to analyze the problem, formulate a hypothesis and test the hypothesis (Silcox, 1993). Silcox purported that it is the reflection process that takes place in problem based learning that allows the student to comprehend and understand the newly discovered information. During the reflection process, it is imperative that the student constantly builds connections using new knowledge within pre-existing schema (Dewey, 1938; Vygotsky, 1978).

After an Experience

Learning should continue after an international experience by giving learners further opportunities for reflection (Kolb, 1984; Roberts, 2006) that connect back to the goals established during prelection. Cognitive science has discovered that reflecting on an experience is in fact itself a vicarious experience (Zull, 2002). Thus reflecting about a study abroad experience can prolong the learning by focusing the learner's attention on the experience for a greater amount of time.

Anecdotal evidence would suggest that educators have widely embraced the importance of reflection after an experience. However, educators can further enhance learning by guiding learners to generalize (Kolb, 1984; Roberts, 2006) their new knowledge by reflecting on the applications and implications of their newfound knowledge. An intense learning activity, like a study abroad experience, can serve as a motivating factor for further learning (Pintrich and Schunk, 1996).

An Experiential Learning

Learner Engagement

Learners must be engaged for learning to occur in any learning environment, including study abroad programs. McLaughlin and her colleagues (2005) presented a framework for examining learner engagement. They defined engagement as “the form of cognitive interaction between the student and instructional content” (p. 4). This framework differs from other conjecture of student engagement in that it focuses on the “in-the-moment engagement with instructional content” (p. 5), as opposed to longer-term assessments of student involvement. According to McLaughlin et al., learner engagement is influenced by four factors: (a) learner motivation, (b) occasion for processing, (c) physiological readiness of the learner and (d) subject matter content level. They went further to emphasize that the four factors are not independent and may actually have some interaction with each other.

Motivation

McLaughlin et al. (2005) defined motivation as “that which moves a student to participate in a given learning activity” (p. 22). Many theories have been developed to explain learner motivation. A few relevant to learner engagement during study abroad experiences include expectancy-value theory, hierarchy of needs and attribution theory. From an expectancy-value perspective, learners will devote more effort to activities in which they expect to lead to a particular outcome and activities in which they value the likely outcome (Atkinson, 1957). A key component of expectancy-value theory is the concept of self-efficacy (Bandura, 1997). Self-efficacy refers to a learner’s perceptions about his or her own abilities to achieve a task or goal.

Maslow’s (1943) Hierarchy of Needs theory asserts that learners have differing needs and that certain levels of needs must be satisfied before other levels can be addressed. According to Maslow, the most basic needs focus on physiological functions like food, water, air, etc. Once physiological needs are met, the next level is safety needs, which include environmental conditions that threaten learners. The next two levels, belongingness and esteem, which focus on the emotional well-being of the learner. Finally, the highest level is self-actualization, which focuses on learners’ desires to maximize their achievements.

A final way to examine motivation is attribution theory (Weiner, 1985). Attribution theory looks at outcomes based on perceived causes. Central to this theory is the concept of locus of control, in which learners attribute outcomes to things within their own control (internal locus of control) or things outside their control (external locus of control). Weiner, Frieze, Kikla, Reed,

Rest and Rosenbaum (1971) postulated that learners attribute success to ability, effort, difficulty and luck. Ability and effort are internal factors. Difficulty and luck are external factors. Student motivation is a definite factor that should be considered when facilitating study abroad experiences.

Occasion for Processing

Occasion for processing refers to the “means by which the brain receives, uses, stores and retrieves information from the environment” (McLaughlin, 2005, p. 9). At the core of this process, learners use their senses to interact with the environment and then process that information in their brains by activating neural networks and developing schema (Bransford et al., 2000; Zull, 2002). Learning is a cognitive process that occurs inside the brain and thus outside the view of an educator. McLaughlin et al. posited that from an educator’s perspective, it is more important to focus on the occasion for processing by creating meaningful learning experiences that maximize the opportunities for learners to process information. Study abroad experiences create a plethora of opportunities for students to process new information.

Physiological Readiness

From a biological perspective, the human body and mind must be physiological ready for learning to occur (McLaughlin et al., 2005). They defined physiological readiness as a student’s “capacity to pay attention and perform the other cognitive processes necessary for learning” (p. 13). McLaughlin et al. presented four factors that impact physiological readiness: (a) attention, (b) stress, (c) disabilities and (d) nutrition and sleep.

As noted previously, learning is a process by where information is received through the senses and processed in the brain. Accordingly, before learning can occur, learners must pay attention to the appropriate information received through the senses (McLaughlin et al., 2005). However, in nearly any environment the amount of information received through the senses is greater than the amount of information the brain can process (Bransford et al., 2000; McLaughlin et al.; Zull, 2002). So, for learning to occur, learners must filter through information and attend to the things relevant to what is to be learned.

When discussing stress, McLaughlin et al. (2005) presented a continuum that went from non-stress, which they equated to being not being awake, to total stress, which they equated to panic. In the middle of this continuum is an optimal stress level, in which learners reach maximum performance. Just below optimal stress, McLaughlin et al. discussed eustress, which is a positive

level of stress that increases performance. In contrast, just above optimal stress, is a level called distress, in which performance is inhibited. Physiological readiness can definitely impact a study abroad experience.

Content Level

Content level refers to level of difficulty of the knowledge and/or skills that students are expected to learn (McLaughlin, 2005). All new learning builds on previous knowledge (Dewey, 1938; Kolb, 1984; McLaughlin et al., 2005). If students do not have sufficient prior knowledge, they will have difficulties learning the concepts presented. Oppositely, if students have already mastered the concepts presented, they may become disengaged with the new learning experience. McLaughlin et al. (2005) suggest that new concepts should be presented at a level just above what the students already know. This certainly has implications for educators facilitating study aboard experiences.

Intercultural Sensitivity

Another theme that emerged from the literature was that of culture. Study abroad experiences often create the opportunity for the learner to experience and interact with cultures that are different from his or her own. Learners often report that interacting with the people while abroad is one of the more impactful parts of a study abroad experience (Wingenbach et al., 2006; Rodriguez and Roberts, 2011). Experiencing another culture can be a life-changing experience that often means learning as much about one's own culture as it does learning about another culture (Delaney, 2011).

Developing intercultural sensitivity is often explained through some kind of stage theory, whereby learners develop greater cultural awareness as they progress through a series of stages. Some of the often-referenced theories come from the tourism literature (Oberg, 1960; Hottola, 2004). These theories generally propose that travelers will often experience shock or confusion at the beginning of an experience. This is often followed by a period of great excitement. Then if the learners continue to progress, they either begin to adapt to the local culture or they oppose the local culture (Hottola, 2004). As the experience draws to a close, learners often experience mixed emotions, excitement about returning home, but sadness about leaving behind this new world they have learned about. Hottola (2004) and Oberg (1960) both suggest individual travelers move through the stages independently and may not reach each stage. Additionally, they also propose that the stages are not discrete and that travelers may move backwards and forward depending on the activities of a given day.

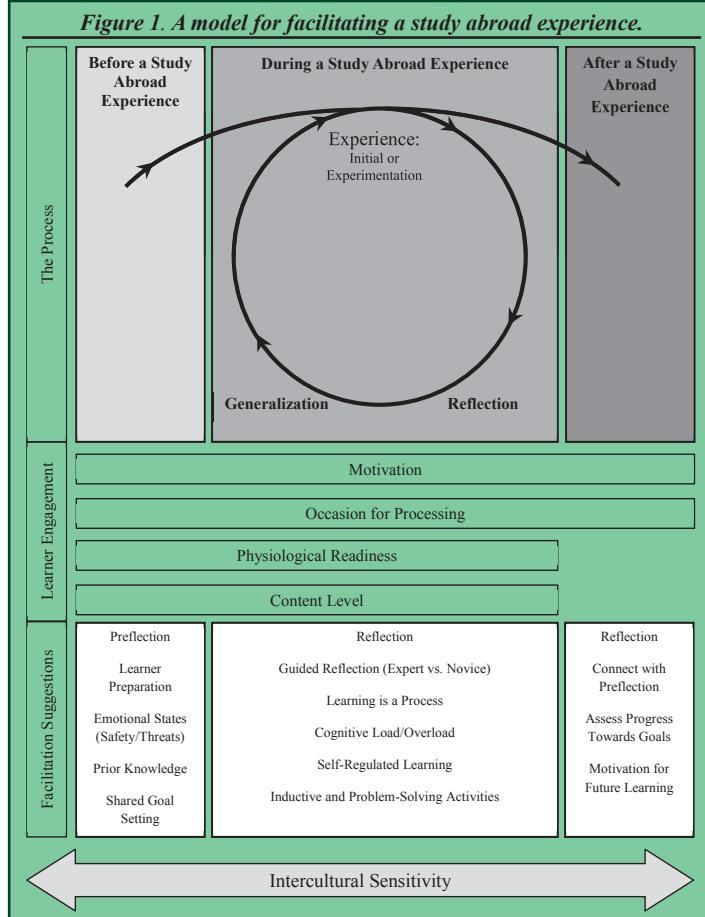
Summary

As a result of reviewing the literature it was confirmed that cognitive science and contemporary learning theory provide a solid framework to help educators facilitate learning before, during and after a study abroad experience. An overarching understanding of learner engagement and intercultural sensitivity can also help educators facilitate meaningful experiences. A model was developed to guide educators through his process (Figure 1).

Before an experience, it was concluded that educators should focus on preflight (Jones and Bjelland, 2004). Educators should facilitate activities that focus on preparing learners for the experience. These activities should take into account the emotional state of the learner and focus on establishing a safe and non-threatening expectation. Educators should also take time to assess the learners' preexisting knowledge and plan to connect the new experiences with that prior knowledge. Additionally, learners should begin to explore the cultures that will be experienced during the study abroad experience. Finally, educators and learners should work together to establish goals for the experience.

The authors also concluded that during an experience educators should implement activities for learner reflection. Further, with novice and inexperienced learn-

Figure 1. A model for facilitating a study abroad experience.



ers this reflection will need to be more guided, whereas experienced learners with some expertise may not require guidance. However, even for experienced learners, an international experience is sensory-rich, which may lead to cognitive overload. Educators should remember that learning is a process and will be on-going throughout the experience. Additionally, inductive and problem-solving activities may be used to enhance learning. Where possible, educators should seek to foster self-regulated learners. Finally, educators should be prepared to help students explore and understand the cultures experienced.

Finally, it was concluded that after an international experience educators should also facilitate reflection activities. These post-experience activities should be tied back to the preflective activities, including an assessment of progress to the shared goals. After the experience, learners may also be better prepared to discuss what they learned about the cultures experiences during the study abroad experience. Finally, an international experience can serve as a motivation for continued learning, so educators should help learners identify strategies for advancing their knowledge.

It is recommended that educators utilize this framework while facilitating study abroad experiences, paying close attention to the facilitation suggestions for before, during and after an experience. Implementing this framework should enhance learning and thus make graduates better prepared for a global society (National Research Council, 2009). This model should also be revisited occasionally to update it as our understanding of this type of educational experience further develops.

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Service Learning Processes and Challenges in Iran: A Case Study

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Abstract

There have been increasing calls for service learning projects in agriculture due to employers' concerns with students' inability to communicate within a professional workplace. The purpose of this case study research was to explore the effective elements and challenges of service learning projects within agriculture education institutions in Iran. A total of 354 agriculture students who were involved in service learning participated. Using exploratory factor analysis, our findings revealed that students generally agreed upon 11 important factors that should be effectively included in any service learning program: The most important factors have been labeled, respectively, Administrative Needs, Financial Needs, Motivational Needs, Educational Needs, Project Assessment Needs, Planning Needs, Legal Needs, Project Time Needs, Teacher Preparation and Bureaucratic Needs. While service learning is more advanced in the United States, it is in its relative infancy in many other states. Therefore, this study has broad implications for any institution interested in beginning a program within their agriculture education institution.

Introduction

Programs of education within the agricultural field have long been and continue to be an important process in higher education across the world. Within the state of Iran, the educational system in agriculture has made remarkable progress in the last 15 years; in part due to the significant shifts in higher education administration there (Acar, 1993). Since 1990, over 100,000 agricultural

students have graduated from programs of agricultural education in Iran (Hosseini et al, 2008).

Even outside of the field of agriculture, one of the central aims of higher education has been training students to translate their education to problems outside of the classroom (Boyer, 1987). Educational programs that allow students to explore real issues unconstrained by the walls of the classroom have been shown to not only increase learning, but to boost interpersonal skill and critical thinking (McManus and Gettinger, 1996; Slavin, 1995). Projects that allow students to interact with each other in practical settings to accomplish group goals also increase students' motivation for learning (Burron et al., 1993; Slavin, 1983). Moreover, researchers have found that students often learn material more comprehensively when placed in group projects where they interact with each other (Ndelt et al, 1997; Berle, 2007).

According to McKeachie (1999), many institutions continue to utilize traditional forms of pedagogy such as lecturing, which makes it difficult for students to maximize their learning of both the science and practice within their fields. Research in the specific field of agricultural education reinforces these findings. This can create a vicious circle for students, where they end up possessing less skill and competence in interpersonal projects and treat what group projects that do exist with indifference and even antipathy (Johnson et al., 2006). For these reasons, agricultural educators should explore more options for group participation and practice in real-world contexts, especially in programs that have not traditionally offered them.

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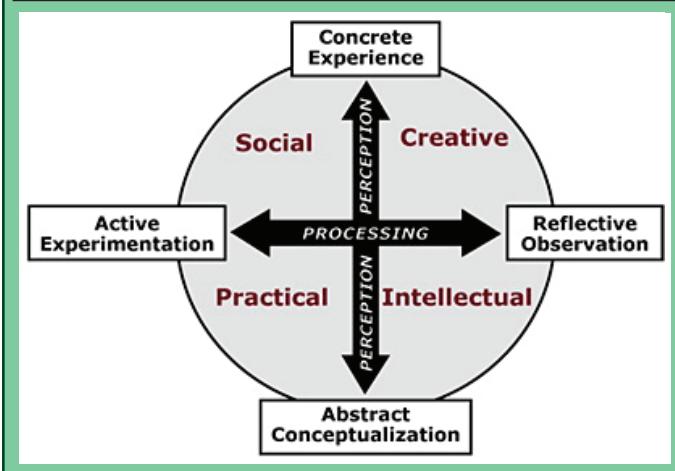
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This research study focused on a particular aspect of group learning that has been in existence for many years but is only starting to emerge outside of Western educational systems: group service learning. While service learning has many definitions, we utilize one supported by the U.S. National Service Learning Clearinghouse: “*A teaching and learning strategy that integrates meaningful community service with instruction and reflection to enrich the learning experience, teach civic responsibility and strengthen communities*” (National Service Learning Clearinghouse, 2012). In essence, students engaged in service learning combine social activities through community service with classroom learning and reflection. Used in combination, such activities and classroom learning combine to deepen understanding of course learning outcomes and civic issues (Ehrlich, 1996). Service learning has been used as an effective pedagogy across virtually all aspects of higher education in the United States, including within engineering, liberal arts, the social and hard sciences, agricultural medicine and many others (Webster and Hoover, 2006). In addition, its effective expansion to other countries is beginning to emerge (Motameni, 2009). Few educators would refute the overwhelming empirical evidence of the benefits of service learning on both student learning and their personal and interpersonal growth (Jeandon and Robinson, 2010).

In agricultural education, service learning has become a strong foundation for student learning and growth, as it provides students a means to experience how service is rooted in the practice of agriculture (O’Neil and Lima, 2003). Berle (2006) has shown how service learning aids students in deepening their understanding of horticulture, while Manthooth and Fritz (2006) suggest that students become more effective in curricular mastery. These gains may be, in part, a result of the availability of different types of learning opportunities aligned with more diverse learning styles. We utilize Kolb’s (1984) experiential learning theory (Figure 1) as the theoretical framework underlying our assumptions that a comprehensive service learning program would be beneficial regarding achieving deeper educational outcomes. The model shows that students possess the potential to more comprehensively learn when they are allowed the opportunity to experiment, experience and reflect, in addition to the more traditional conceptualization which often takes place within a lecture.

Given the benefits and relative scarcity of service learning programs in Iran, the aim of this research was to study a sample of Iranian students who have participated in such programs to determine the most effective service learning practices leading to learning and interpersonal skill growth.

Figure 1. Kolb’s Experiential Learning Theory

Methods

Our research comprised an exploratory factor analysis on data collected through surveying a population of students experienced in service learning techniques. This effort was grounded in the need to identify the factors that students identified as necessary for their success within a service learning program. The population for the study included students enrolled in agricultural education programs in West Iran ($N = 1214$). A stratified random sample was used to ensure representation from all institutions ($n = 354$). From this sample, 171 students were enrolled in Hamadan Agricultural Center and 183 students were enrolled in Kermanshah Agricultural Center. Of the 354 students, 197 students were male and 157 students were female. The majority of students studied within agricultural mechanization programs. Moreover, the majority of students were between the ages of 18-25.

Student participants completed a survey measure asking them in Farsi to identify the specific factors that were necessary for a service learning program to be successful within agricultural education programs in Iran. In addition to demographic items related to gender, age, coursework and experience in service learning opportunities within their agricultural education, the survey included 89 items describing various aspects of a potential service learning experience. For these items, participants were asked to rank the each item’s significance to a successful service learning experience. All such items were Likert scored with a range of five; responses ranged from “absolutely necessary” through “no comment” to “never necessary.” The 89 items covered diverse topics such as “Guidelines for projects should be set by the Agricultural Ministry of Iran,” “Students should cover the cost,” “The project should lead to certification,” and “The experience should be called “service learning.”

Service Learning Processes

Exploratory factor analysis (EFA) was conducted using SPSS software to uncover the underlying factor structure within the relatively large set of variables. Within EFA, the researcher's a priori assumption is that any item may be associated with any factor; no prior theory exists and one uses factor loadings to intuit the factor structure within the data (Mansourfar, 2008). We used Varimax rotation, which is the most commonly used method of orthogonal rotation, in identifying factors within the survey responses, thus maximizing the variance of factors across the variables. See Table 1 for the results of our KMO and Bartlett's Tests. A KMO result of .74 is considered adequate, while a significant Bartlett's test signifies correlations within the dataset appropriate for conducting a valid EFA analysis.

Table 1. KMO and Bartlett's Tests

Kaiser-Meyer-Olkin Measure of Sampling Adequacy		.740
	Approx. Chi-Square	8436.715
Bartlett's Test of Sphericity	df	1176
	Sig.	.000

Results and Discussion

The 89-item survey yielded 11 usable factors with eigenvalues over 1.00. All factors with eigenvalues below 1.00 were dropped. Each of the 11 remaining factors was examined and individual statements within them analyzed for the purpose of describing the overlying factors.

The 11 factors that emerged were labeled Administrative Needs, Financial Needs, Educational Needs, Motivational Needs, Planning Needs, Cultural Needs, Teacher Preparation Needs, Legal Needs, Project Time Needs and Bureaucratic and Project Assessment Needs. Table 2 describes the factors and the survey items that loaded most highly onto them. These 11 factors and their corresponding items represent what should be present to maximize learning within a service learning initiative in Iran. For example, according to Iranian students who have participated in serving learning initiatives, service learning initiatives "...should require a set of implementation guidelines on service learning supported by the Ministry of Agriculture." This survey item possessed a loading factor of .800. Grouped with similar items, we labeled this factor "Administrative Needs." Another factor we labeled as "Financial Needs" included two important items, including, "Teachers that utilize service learning should be compensated appropriately" (a factor loading of .790). "Motivational Needs" included the necessity to share the cost burden of the initiative with students (e.g. not forcing all costs on them), which possessed a factor loading of .622. In addition, a factor labeled "Educational Needs" included the idea that service learning projects should be

conducted exclusively within the field of agriculture and had a very high factor loading of .867. Other important factors that emerged included Legal Needs, Project Time Needs, Project Assessment Needs, Bureaucratic Needs and Cultural Needs; all of which suggested these are very important to students who participate in the service learning process.

These findings show that there is some commonality among Iranian agricultural education students regarding the best practices for service learning in the region. Teacher training, preparation and responsibility are significant issues for Iranian students who have participated in service learning in the past. These results suggest that students think comprehensively about their service learning experiences and recognize that successful programs should incorporate a complex combination of educational planning, financial resources, bureaucratic administration and cultural cache.

Table 2. Service-learning Factor Loadings

Factor	Item	Loading
Administrative Needs	Implementation guidelines on service learning supported by the Ministry of Agriculture	.800
	Teachers should serve as the manager at the service learning project	.638
	The location of the project should be in an agricultural farm	.612
Financial Needs	Teachers should be appropriately compensated for their work	.790
	Tax rates should be reduced to partner organizations	.786
Motivational Needs	Students should share the cost associated with the project	.622
	Students should earn a wage for their work	.500
Educational Needs	Conduct service learning projects exclusive to the field of agriculture	.867
	Service-learning should be a basic course in the curriculum of Agriculture	.705
	The project should be suitable for seniors	.735
Project Assessment Needs	Project report by Students should create a report of their work at the project conclusion	.698
Planning Needs	The project should balance the outside organizational goals and those of the educational institution	.684
	Implement training workshops for educators by the Director of curriculum	.674
Legal Needs	Private firms should be able to partner with the educational institution	.822
	A framework for service learning project rules should be approved by the government	.815
Cultural Needs	Projects should be labeled "service learning"	.472
	Participating in a project should have social prestige	.541
Project Time Needs	Project work should be conducted outside of classroom meeting times	.787
Teacher Preparation Needs	Younger teachers are better than older teachers for service learning projects	.735
	Teachers should take responsibility for project success	.558
	Teachers should possess a spirit of partnership with students	.509
Bureaucratic Needs	Grades should be distributed meritocratically	.522

Recommendations and Conclusion

The complexity required for successful service learning should not represent barriers to the broad introduction of service learning programs in Iranian agricultural education. Motamini, et al (2009), among others have pointed out the educational benefit of service learning to a student's educational experience. Our results suggest broad guidelines in administrative, financial, educational and evaluative areas for educational administrator in cultivating the growth of programs like these. However, such growth can only come from additional resources. Given that educational budgets in emerging programs throughout Iran and the region are limited, we therefore recommend that government allocate a special budget for carrying out projects like these within higher educational centers focused on agricultural education. Given existing evidence on the benefits of service learning programs to educational growth, we feel that such a budget would be justified by increased learning and skill development in participating students.

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Opening the Doors to a Global Classroom: An International Social Media Collaboration

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Abstract

A social media platform (ValuePulse) linked California agribusiness undergraduates in a marketing class to students in a marketing course in Ireland. The social media platform was used to create a combined group allowing students in both classes to contribute to discussion board posts on current news articles related to marketing. Instructors from each course alternatively posted articles. A survey tool was used to gauge student perceptions of the experience. Results were compared to a control group of California undergraduates using the same social media platform to discuss articles related to their courses, but without the international contingent. Survey results show an increased level of engagement by the international collaboration group. A greater proportion of students in the international collaboration said they learned from their classmates' comments on the discussion board (73% to 86%) and said that they found the experience rewarding. These results are consistent with prior studies on the internationalization of higher education classrooms and suggest vast potential associated with the incorporation of technology-aided global classrooms.

Introduction

Globalization has brought down barriers across the world and, according to some, has made the world "flat" (Darling-Hammond, 2010; Friedman, 2005). Technology's contribution to that globalization is irrefutable. Technology has also shaped higher education and has created similar globalization opportunities (Bird and Nicholson, 1998; Miltenoff, et al., 2011). Not only is technology facilitating education's move from a system based on delivered wisdom to one of user generated wisdom, but it also has a role in a single classroom's ability to host and facilitate learning across countries (FitzGerald, 2012; Meyer, 2012). The global and

interdependent nature of today's world has created the opportunity for education to mirror that interdependency and, at the same time, has created the demand for graduates of universities to be prepared to operate in a global world (Bourn and Shiel, 2009; Miller, 2002). Educators must work to provide a learning environment that meets those needs.

The internationalization of higher education can come through a variety of forms, from attracting a diverse student population to distance learning where students take courses from overseas schools (Coryell, et al., 2012; Lasonen, 2010). Largely defined *"as the process of integrating an international, intercultural, or global dimension into the purpose, functions or delivery of postsecondary education,"* there are other opportunities to bring the world into even traditional face-to-face courses (Knight, 2003, p. 5). High school students in Japan collaborated through teleconference with a Florida class on mutual projects and assignments in 2002 with significant benefits relating to contextual-based learning and student motivation (Loveland et al., 2004). However, difficulties in communication and the nature of distance learning technologies themselves arose (Loveland et al., 2004). New Zealand health science students used email to contact physiotherapists in developing countries concerning a fictional scenario they had been given, allowing them to gain a better appreciation of differences in their field across countries and cultures (Williams and Blaney, 2000). Intercultural dialog in higher education has been shown to contribute to conflict management and resolution, even in high conflict regions (Bergan and Van't Land, 2010). The outcomes related to an internationalized curriculum are vast (including the ability to think globally, awareness of cultural perspectives, and a value of diversity) and occur even when internationalization is done through

technology (Fallows and Steven, 2000; Leask, 2004; Patterson et al., 2011).

Constructivist pedagogies involve actively engaging students in learning as opposed to students passively receiving information from an instructor. Within the constructivist theory, social constructivist theorists believe that the social aspect of learning is essential (Richardson, 1997). Similarly, Schleicher (2012) reiterates in his TED talk that education based on delivered wisdom to be one of the past, while education based on user-generated wisdom is the approach that will prepare students for the jobs of the future.

Discussion boards facilitate peer learning and allow students to be influenced by their peers (Fung, 2004). The uses for discussion boards as a tool for engaging students and allowing peer-to-peer engagement and learning are measurable (Hendrickson, 2009). Discussion boards are believed to facilitate collaborative and social learning, but have also been linked to improved communication skills and higher levels of critical thinking (Wilson and Fairchild, 2011). In addition, Pena-Shaff et al. (2005) found a positive relationship between online participation in discussion boards and student satisfaction in the course.

Student engagement is positively linked to desirable learning outcomes, including both critical thinking and grades (Carini et al., 2006). One of the ways to get students engaged is by making the material relevant for them. Linking course concepts to current events and the news is an approach to making the material relevant, thus leading to student engagement and ultimately, student learning (Kember et al., 2008). Prior research has shown the powerful teaching impacts associated with using current events to teach course concepts (Grise-Owens et al., 2010).

Recognizing the benefits of providing relevant and timely material to students and also the potential learning benefits associated with international collaborations, the objective of this paper is to showcase an international virtual collaboration between two university classes and isolate impacts on student engagement. If technology and discussion board platforms make it feasible to create an international learning environment, in what ways do students benefit from that experience? Are there drawbacks to the experience? And, are students more interested and engaged with the course material as a result of the international collaboration?

Methods

An instructor from the National University of Ireland Galway (NUIG) and one from California Polytechnic State University (CPSU) at San Luis Obispo both agreed to use a fall 2012 face-to-face marketing course

for an international classroom collaboration. The NUIG contingent included 36 students that were enrolled in an e-commerce and marketing course while the CPSU contingent included 45 students enrolled in an upper division agribusiness-marketing course. The instructors included participation in a mutual online discussion as a graded portion of the course (as suggested by Lesak, 2004), assigning points for meaningful comments on the discussion board. At the end of the respective terms, students completed a survey of their engagement, interest in the online discussion board, and perspective of the international collaboration.

The instructors employed the social media platform ValuePulse as the basis for the international discussion forum. ValuePulse is a free social content discussion forum that pulls curated RSS feeds and allows users to discuss current news. Instructors agreed to alternate weeks of posting articles to their combined group of students, with students from both classes commenting and discussing the articles. Posted articles were current news related to marketing from a wide array of news sources and were meant to supplement textbook material and established course content.

Survey results from the Irish and American students completing the online discussion collaboration would be compared to survey results from students taking other marketing courses at Cal Poly during the same term, also with an online discussion, but with no international collaboration. The control group courses included the online discussion board as a graded portion of their course, with instructors posting relevant articles for the class to discuss. The control class' discussion was amongst the class members only, rather than with an outside course's involvement. The control group courses, like the international collaboration, were all upper division business and marketing courses taught during the fall of 2012. Discussion topics in both the international collaboration and the control groups included timely news articles that were tied back to course topics, however it could be argued that students in the international collaboration were exposed to a more diverse set of topics as they were being exposed to Irish and US centered news articles.

A survey instrument was designed with 22 questions relating to the student's demographic information and prior tools used for sharing class documents and news articles relating to class content. The survey also included questions on perceptions of the social media platform (ValuePulse), the collaborative learning environment, and the student's engagement with the course material. Students from the international group and the control group were all sent links to the survey through SurveyMonkey and encouraged to respond.

Results and Discussion

As planned, students from both the NUIG and CPSU courses joined a single group on ValuePulse and participated in weekly news article discussions relating to core marketing topics. Students from CPSU were designed with a “Poly” before their name, allowing all students in the collaborative discussion to identify their overseas classmates. The faculty alternated posting articles with question prompts for students and students were instructed to respond to the news articles with their insights and opinions based on the prompts provided by the instructors. The discussions on each article included students from both countries. Students responded to each other’s comments. Irish students made specific comments to the posts of American students and American students made specific references to the posts of Irish students. It was truly a cross-cultural dialog about current marketing issues.

Survey results were obtained from 30 students from NUIG and 39 CPSU students, 83% and 86% response rates, respectively. The control group included 123 survey responses. Initial comparisons between the Irish students and the students from the US courses (both the combined course students and the control group students) revealed that 60% of the Irish course was male, and 53% of US student respondents were male. The Irish student respondents had less variability in the number of years that they had been in school and were, on average, further along in their education relative to the US students (average of 3.2 years for US students, with an average of 4.5 years for the Irish students). Relative to existing usage of technology for education purposes, the Irish students had significantly less experience using Google Docs to share course content (30% vs. 66% for the US students), but significantly more experience using Twitter for class related communication (33% of the Irish contingent compared to just 2% of the US students) and more experience using Wikis for class communications (27% of the Irish contingent relative to just 7% of the US students). Prior use of Facebook for class content was comparable at 56% of the Irish students and 63% of the US students. Some distinctions were apparent; however, this demographic information suggests that although the students may be separated geographically, they are reasonably comparable as upper division marketing and business students in slightly male dominated classes with a reasonable amount of prior experience using social media and article sharing related to their coursework.

Strong learning implications as a result of the ValuePulse discussions were apparent in the control group survey responses. Results from the control group suggest that learning, engagement, written communication, and critical thinking skills all improved as a result of using

the social media news discussion. In addition, students in the control group reported learning from each other (73% agreed or strongly agreed with a statement related to learning from each other). These results are consistent with expectations based on Carini et al. (2006) and Kember et al. (2008) that student engagement leads to critical thinking skills and that relevance is a driver of student motivation. Similarly, the international collaboration class reported increased engagement, critical thinking, knowledge about the student’s field of study, and written communication skills. Table 1 depicts complete survey results from the control group and the international collaboration class.

Comparing the results of the international collaboration group to the control classes reveals a stronger crowdsourcing effect in the international collaboration class. Seventy-three percent of students in the control group report learning from classmates, while 86% of students in the international collaborative class reported learning from their classmates through the online discussion, a statistically significant difference at the .05 level. The addition of a multi-cultural component appears to add engagement and interest in reading and discussing information relevant to students’ coursework. In addition to the positive learning outcomes associated with the use of the discussion board, over 90% of students in both the control group and international collaboration class agreed or strongly agreed that they liked being able to share their opinions. Not only are there learning outcomes associated with the engagement, but students are also enjoying the process.

Practical Suggestions and Insights

Survey results indicate potential for incorporating an online current events discussion board as a means to enhance a student’s engagement, communication skills, and critical thinking in agribusiness courses, and support an enhanced collaborative peer-learning environment when the discussion board is combined with an international contingent. For other instructors interested in incorporating an international collaboration into course discussion boards, the authors recommend collaborating with courses covering similar content. While the courses do not have to be identical, in fact, slightly different course topics may provide some added twists to the perspectives being showcased, the base of the course material should be comparable. In addition, the discussion must be incorporated as a graded activity. Each instructor can determine the weights and how the discussion fits into the overall course grade, however, to create an incentive for students to be engaged on the international discussion board, there needs to be some points attached to the activity. The authors also

recommend using current news and events as the foundation for eliciting engagement from students and both faculty should be involved and responsible for finding the content to share. The engagement of both faculty will help model behavior and lead to an even richer environment of multiple perspectives. And finally, identifying the students by country, especially in larger courses, will help further showcase the diversity in perspectives or, perhaps, showcase some surprising similarities.

Summary

Literature from across the field of higher education supports the educational benefits associated with active, social, and internationalization of teaching pedagogies. Through an online discussion tool with a group of university students in Ireland and the United States, student engagement increased, students learned from each other, written communication improved and critical thinking skills improved. Relative to a control group of students, the international collaboration group had an intensified social learning experience, learning from their overseas classmates. Technology made the internationalization of these two marketing courses virtually seamless. What once may have been impossible is now readily available to instructors of higher education. There are challenges related to the timing of the courses, finding willing international collaborators and language barriers, but this case provides one example of a global classroom created through social media that led to many of the internationalization learning outcomes promised in the teaching literature.

Agriculture is global, and the need for students studying agriculture to have an international perspective may be even more relevant than for other disciplines. Prior literature has advocated the need for creating a learning environment that engages post-secondary agricultural students with their subject matter through active involvement. Not only did this relatively straightforward discussion board format encourage students to be actively involved and think about the implications of current events on marketing agricultural and food products, but by incorporating the international contingent students became even more engaged in the process (Estepp and Roberts, 2011). The international exposure benefited the students in the short term with regard to their engagement in the course, but the experience will likely hold far-reaching implications as they begin their careers with an additional international perspective. The future will undoubtedly hold many additional examples as others employ technology to

Table 1. Survey Results from the International Collaboration Class vs. the Control Class

Through ValuePulse...	Combined	US Only	P-value*
	agree or strongly agree	Control	
My written communication skills have improved	60.9%	54.5%	
I learned from classmate's comments	86%	73%	.049
I feel like I know more about the general news	76.8%	82.1%	
I know more about my coursework and field of study	84.1%	80.5%	
My critical thinking skills have improved	75.4%	69.1%	
I feel more engaged and interested in course topics	89.9%	88.6%	
I like being able to share my opinions	92.8%	90.2%	

* P-value was obtained from an independent samples t-test and only reported for significant differences at the .05 level.

create a rich international learning environment for our agricultural students.

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Universally Enforced Attributes of Leadership with Current Prevalent Leadership Theories Taught at Texas A&M University

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Abstract

Globalization is changing the shape of today's world. The result is an increasing importance for leaders to possess international leadership competencies as well as westernized competencies. Researchers are questioning exactly which competencies are needed to be an effective global leader across cultures. To date, the GLOBE (Global Leadership and Organizational Behavior Effectiveness) study is the largest worldwide leadership study, which focused on cultural leadership competencies. This article uses the universally effective leader attributes defined by the GLOBE study to assess whether the Texas A&M leadership program is preparing students to be competent global leaders. It is concluded Transformational and Charismatic leadership theories taught at Texas A&M are universally endorsed theories, while behavioral leadership, task and relationship competencies, are not considered important for westernized leadership. This has profound impacts on the leadership education community. The question becomes: should leadership programs focus more on global leadership theories and competencies?

Introduction

Globalization

Much like leadership, globalization is a widely used term that does not have a clear, agreed upon definition. Often it is used to refer to the increasing interconnectedness of today's world. Globalization is a complex issue that encompasses political, economic, technological and social factors. The term globalization was coined in 1985 by economist Theodore Levitt (Stromquist, 2002) but is an economic trend, referred to as neo-liberalism, evidenced throughout history long before the 1980s. Neoliberal economics center on an international free market, less government regulation, and more trade with more countries. The result is a more

interconnected world through international trade and investment (Mayo, 2005). While globalization has its roots in economics it has been undeniably proliferated by our technological advancements of the late 20th and early 21st centuries. The Internet, for instance, has revolutionized how the world does business. People who used to be worlds away are now accessible at the click of a mouse. The increase in globalized teams in industry has skyrocketed in the last 5 years (Coe, et al., 2007).

Globalization has pressed companies to be internationally active in order to stay on top. Companies are expected to be "world class- in orientation, sourcing and standards...and to thrive domestically by joining global networks" (Kanter, 2010, p. 572). Globalization does not only call out to business leaders but also to political, public and non-profit leaders to manage the complexity of our changing world. The result is an increasing importance for leaders to possess international leadership competencies as well as national competencies. Thus, globalization is changing the face of leadership and researchers are drawing their attention towards how leadership is perceived and executed in different world cultures.

Implications for Agricultural Leadership Educators

Peter Dorfman (2004), a member of the GLOBE Coordinating Team, states in a Theoretical Letter "the fact is the terms leaders and leadership are not as universally revered as we in America think" (p. 283). Is it true that Americans' view of leadership varies significantly from other cultural views of leadership? If so, what are the implications for leadership educators? On the other hand, are there aspects of leadership that transcend cultural barriers? Many universities have added global perspective courses as a requirement for

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all majors. For example, one goal articulated in the 2009 Texas A&M Task Force Report for the university in this case was “to be recognized internationally for notable impacts of international initiatives of faculty and students” (p. 2). Leadership educators have the ability to be on the forefront of this opportunity. The pressure of university regulations coupled with the notion of specific and divergent leadership competencies one must possess to be effective in a global market place, leadership educators are feeling the need to change curriculum (Moore, et al., 2011). Irani, et al. (2006) note most students do not possess the leadership skills needed to be global leaders. The objective of this study was to compare the GLOBE universally endorsed leadership attributes with leadership theories taught in leadership theory courses at Texas A&M.

GLOBE Studies

GLOBE stands for Global Leadership and Organizational Behavior Effectiveness and was an 11 year study conducted in 62 different countries. The GLOBE research study is the largest worldwide leadership study conducted thus far. The intent of the GLOBE study was *“to explore the cultural values and practices in a wide variety of countries and to identify their impact on organizational practices and leadership attributes”* (House et al., 2002, p. 3).

The definition of leadership held by GLOBE researchers is “the ability of an individual to influence, motivate and enable others to contribute toward the effectiveness and success of the organizations of which they are members” (House et al., 2002, p. 5). A theory of focus for the study is the implicit leadership theory (ILT). This theory, coined by Lord and Maher, states individuals have implicit beliefs (also known as mental models or schemas) about the types of skills, behaviors and attributes of effective and ineffective leadership (House et al., 2004, p. 669). Thus leadership is “in the eye of the beholder” (p. 348) or “the process of being perceived by others as being a leader” (Northouse, 2010, p. 359). GLOBE researchers built on this theory to identify the culturally endorsed implicit leadership theory (CLT). Rather than an individual level theory, CLT is a cultural level theory that states that members of an organization or society have shared beliefs about effective leadership. The study provides “convincing evidence that people within cultural groups agree in their beliefs about leadership” (House et al., 2004, p. 669). CLT profiles were created to represent shared leadership beliefs of a common culture. Therefore researchers not only defined how individuals within a culture view leadership based on shared beliefs, they compared how those beliefs varied in content across cultures (House

et al., 2004, p. 671). From this research the GLOBE study was able to identify attributes that are universally endorsed as contributors and inhibitors of effective global leadership.

Universally Endorsed Attributes of Leadership

Is leadership culturally contingent or can it transcend cultures? The answer according to the GLOBE study is yes and no. Data shows there are specific aspects of leadership (namely Charismatic/Transformational and Team Leadership Theories) that are transferable across cultures while at the same time there exists culturally contingent attributes of effective leadership. There is clear and abundant evidence for the support of culturally contingent leadership attributes but because of the constraints of the paper they will not be discussed. This paper will focus on the attributes in the GLOBE study found to be universal.

The universal leadership attributes are characteristics which are cross-culturally generalizable. This universal focus of human behavior is termed etic and defined by GLOBE researchers as “behaviors ...that can be compared across cultures using common definitions and metrics” (Hartog et al., 1999, p. 230). GLOBE found 22 attributes universally endorsed as contributing to effective leadership termed Universal Positive Leader Attributes. These attributes are listed in Table 1.

One hypothesis of the GLOBE study was the idea that Charismatic/Value-Based leadership behaviors and leader integrity would universally be viewed as effective leadership. Charismatic/Value-Based leadership is defined in the study as leaders who “articulate and emphasize end-values such as dignity, peace, order, beauty and freedom” (p. 673). “[It is] the ability to inspire, to motivate and to expect high performance outcomes from others on the basis of firmly held core values” (House et al., 2004, p. 675). The definition includes six subscales: visionary, inspirational, self-sacrifice, integrity, decisive and performance oriented (House et al., 2004). The results of their study indicate the visionary and inspirational aspects of Charismatic/Value-Based leadership are universally considered effective (see Table 1). However, attributes comprising other subsets of Charismatic/Value-Based leadership were not universally endorsed. The attributes also support team oriented leadership and leader integrity as being universally endorsed leadership styles (see Table 1).

Team leadership is defined in the GLOBE study as “a leadership dimension that emphasizes effective team building and implementation of a common purpose or goal among team members” (p. 675). This leadership dimension also has six subscales: collaborative team

Table 1. GLOBE Universal Positive Leader Attributes

Leader Attribute	Corresponding Primary Leadership Dimensions
Trustworthy	Integrity
Just	Integrity
Honest	Integrity
Foresight	Charisma 1: Visionary
Plans ahead	Charisma 1: Visionary
Encouraging	Charisma 2: Inspirational
Positive	Charisma 2: Inspirational
Dynamic	Charisma 2: Inspirational
Motive arouser	Charisma 2: Inspirational
Confidence builder	Charisma 2: Inspirational
Motivational	Charisma 2: Inspirational
Dependable	Malevolent (reverse score)
Intelligent	Malevolent (reverse score)
Decisive	Decisiveness
Effective bargainer	Diplomatic
Win-win problem solver	Diplomatic
Administrative skilled	Administratively competent
Communicative	Team 2: Team Integrator
Informed	Team 2: Team Integrator
Coordinator	Team 2: Team Integrator
Team builder	Team 2: Team Integrator
Excellence oriented	Performance Oriented

orientation, team integrator, diplomatic, malevolent, administratively competent (House et al., 2004). Based on the 22 universally endorsed leader attributes GLOBE researchers state “the portrait of a leader who is universally viewed as effective is clear: The person should possess the highest levels of integrity and engage in Charismatic/Value-Based behaviors while building effective teams” (House et al., 2004).

Although not part of the original hypothesis, GLOBE also found nine attributes to be universally endorsed as hindrances to effective leadership. These are titled the universal negative leader attributes. They are loner, asocial, non-cooperative, irritable, non-explicit, egocentric, ruthless and dictatorial (House et al., 2004).

Prevalent American Leadership Theories

Currently, at Texas A&M the textbooks The Leadership Experience by Daft (2008) and Leadership Theory and Practice by Northouse (2010) are used for the foundational leadership theory courses at the graduate and undergraduate level. These texts will be referenced to define prevalent American leadership theories taught in these specific courses.

Transformational and Charismatic Leadership

Transformational leadership and Charismatic leadership are often used synonymously and while the theories do have some convergence (Rowold and Heinitz, 2007), they are not the same (Daft, 2008).

To begin, in his book Leadership: Theory and Practice Northouse (2010) cites House's theory of charismatic leadership. House defines personality characteristics as well as behaviors of charismatic leaders. The combination of these personality traits and behaviors has a specific effect on followers. Table

2 details the personality characteristics, behaviors and effects on followers as defined by House. Followers of a charismatic leader have a sense of increased self-efficacy thus improving performance (Northouse, 2010).

Daft (2008) states charismatic leaders “*have an emotional impact on people and inspire them to do more than they would normally do, despite obstacles and personal sacrifice*” (p. 364). Daft depicts charismatic leaders as appealing to followers’ emotions by being perceived as leaders who will stick to a cause and triumph over any hurdles. Charismatic leadership inspires followers to overcome or rise above the status quo to create change. Charismatic leaders are unconventional and influence out of personal characteristics as opposed to power. Both Northouse and Daft describe charismatic leaders as emerging during stressful or troubled times, since their “inspiring personality can help to reduce stress and anxiety among followers” (Daft, 2008).

Transformational leadership, on the other hand, is defined as “*the process whereby a person engages with others and creates a connection that raises the level of motivation and morality in both the leader and the follower*” (p. 172). Transformational leadership focuses on the needs of the followers and raising their sense of morality (Northouse, 2010). Daft (2008) refers to transformational leadership as bringing about change by focusing on aspects such as vision, shared values and giving larger meaning to activities. Transformation leadership is a skill set that can be learned and is “based on the personal values and beliefs” of a leader (Daft, 2008).

Northouse (2010) lists Bass’ four factors of transformational leadership: Idealized influence (charisma), inspirational motivation, intellectual stimulation and individualized consideration. Factor one is referred to as idealized influence or charisma. These leaders have high moral and ethical standards, are trusted by followers and provide a clear vision and mission for followers. Factor two, inspirational motivation, refers to leaders who inspire commitment to the vision of the organization through high expectations and using encouraging words. Factor three is intellectual stimulation and occurs when a leader encourages followers’ innovation and development of creative ways to solve problems. Finally, individualized consideration is the fourth factor of a transformational leader. This factor refers to the individual attention a leader gives to a follower in order to meet the follower’s needs. Leaders who embody this factor create a supportive and caring environment.

Style Approach

The style approach, also referred to as the behavioral approach, broadens leadership research to include

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the actions of leaders towards followers (Northouse, 2010). The style approach to leadership is distinguished from the trait approach (focusing on personality traits of leaders) and the skills approach (focusing on the specific skill set of a leader) by studying the behaviors of effective leaders. Three studies are presented in the Daft (2008) and Northouse (2010) texts: the Ohio State studies, the University of Michigan studies and the Blake and Mouton leadership grid. These studies center on a theme of two broad leadership behaviors identified as task behaviors and relationship behaviors (Northouse, 2010).

Much research has been done in the area of style approach to leadership, but these two studies provide a “clear picture of the underpinnings and implications of the style approach” (Northouse, 2010, p. 70). Thus the style approach can be summarized in two broad leadership behaviors- task and relationship.

Methods

The objective of this study was to compare the GLOBE universally endorsed leadership attributes with leadership theories taught in undergraduate and graduate leadership theory courses at Texas A&M. Deductive content analysis comparing the GLOBE with theories taught from the Daft (2008) and Northouse (2010) texts was conducted (Patton, 2002).

Results and Discussion

After content analysis provided substantial findings. Grouping the universal attributes into the westernized theories taught at Texas A&M showed some correlation but also some glaring differences. Table 3 compares the 22 universal attributes that contribute to effective leadership from the GLOBE study to the American definitions of charismatic leadership, transformational leadership and the behavioral approach to leadership.

Charismatic Leadership

Eleven of the 22 universally endorsed positive leader attributes are displayed in charismatic leadership as defined by the Northouse (2010) and Daft (2008) textbooks. The 11 attributes present are trustworthy, just, honest, foresight, encouraging, positive, motive arouser, confidence builder, motivational, dependable and communicative. Because a charismatic leader is described as having strong moral values (Northouse, 2010) the universal attributes trustworthy, just and honest are applicable. Also, charismatic leaders were defined as inspiring followers to overcome the status quo and operate at a higher level than they normally would. For this reason the attributes positive, motive arouser, confidence builder and motivational fall in the category

of charismatic leadership. Since no definition is given in the GLOBE study for foresight it is understood to mean vision casting for this analysis. Because charismatic leaders often emerge during crises foresight, encouraging and dependable fall in this category as well. Finally, the attribute communicative is placed in the category of charismatic leadership since charismatic leaders were previously described as articulating goals and communicating high expectations (Northouse, 2010).

GLOBE researchers found their hypothesis that Charismatic/Value-Based leadership would be universally viewed as effective leadership to be mostly true. It is not surprising then that 11 of the 22 universally endorsed positive attributes are displayed in the American definition of charismatic leadership since the definition of charismatic leadership as taught in American classrooms is similar to the definition provided in the GLOBE study of Charismatic/Value-Based leadership. It can be concluded that Texas A&M leadership educators are effectively producing global leaders when teaching students about charismatic leadership.

Table 2. Personality Characteristics, Behaviors, and Effects on Followers of Charismatic Leadership

Personality Characteristics	Behaviors	Effects on Followers
Dominant	Sets strong role model	Trust in leader's ideology
Desire to Influence	Shows competence	Belief similarity between leader and follower
Self-Confidence	Articulates goals	Unquestioning acceptance
Strong moral values	Communicates high expectations	Affection toward leader
	Expresses confidence	Obedience
	Arouses motives	Identification with leader
		Emotional involvement
		Heightened goals
		Increased confidence

Transformational Leadership

The American definition of transformational leadership includes 12 of the 22 universally endorsed positive leader attributes. The universal attributes are win-win problem solver and the 11 also found in charismatic leadership: trustworthy, just, honest, foresight, encouraging, positive, motive arouser, confidence builder, motivational, dependable and communicative. Because a transformational leader is concerned with meeting the needs of his or her followers (referred to as individualized consideration) the attributes win-win problem solver, dependable and encouraging are applicable. A transformational leader also raises the level of morality in followers thus validating the attributes trustworthy, just, honest, positive, motive arouser and motivational. Lastly, a transformational leader was defined as relying on vision and giving larger meaning to activities. For this reason the universal attributes foresight, confidence builder and communicative fall into the category of transformational leadership. Because transforma-

tional leadership, again as defined in the textbooks used at Texas A&M, embodies various universally endorsed leader attributes, it is concluded to be another universally effective leadership theory.

Style Approach to Leadership: Task Behaviors

The task behaviors a leader might exhibit, labeled initiating structure or production orientation in the Ohio State and University of Michigan studies, display four of the universal leader attributes: plans ahead, administrative skilled, coordinator, excellence oriented. A task oriented leader is focused on task facilitation. Therefore the attributes of plans ahead, administrative skills and coordinator accurately define a task oriented leader. Also, because task oriented leaders are focused on goal achievement the attribute of excellence oriented applies as well. These universal attributes are less descriptive and leave room for interpretation. For instance, the attributes administrative skilled or plans ahead could have a variety of meanings. A leader who “plans ahead” could be considered organized or goal oriented or a micromanager. While the universal positive leader attributes are helpful in defining a global leader, many of these attributes leave much room for interpretation. Because a task oriented leader embodies only four of the universally endorsed leader attributes it can be concluded that the theory is not globally endorsed according to the GLOBE study research.

Style Approach to Leadership: Relationship Behaviors

A relationship oriented leader according to the style approach exhibits six of the universal leader attributes from the GLOBE study. These six attributes are trustworthy, just, honest, encouraging, win-win problem solver, team builder. A relationship oriented leader shows high concern for developing a positive relationship with their followers thus making them trustworthy, just, honest and encouraging. Since a relationship oriented leader respects the needs of their followers they also embody the attributes of being a win-win problem solver and a team builder. While a relationship oriented leader exhibits more universal attributes than a

task oriented leader, it can be concluded that relationship behaviors do not contain a majority of the universally endorsed leadership attributes and thus are not universally effective.

Summary

The GLOBE study set out to define various aspects of how culture affects leadership effectiveness. The theories taught by Texas A&M leadership educators were compared to the universally endorsed attributes that contribute to effective leadership as defined by the GLOBE study. It is concluded that charismatic and transformational leadership theories taught at Texas A&M are endorsed as universally effective leadership theories. However, the style approach including both task and relationship leader behaviors, is not universally endorsed as an effective leadership theory.

One weakness of the GLOBE study is the ambiguity of the universally endorsed leader attributes. Effectively analyzing leader attributes is challenging due to the fact the GLOBE study does not provide a clear definition for these attributes. Thus, there is not a universal standard for researchers to use when referencing the universally endorsed results of the GLOBE study.

While the GLOBE study found Charismatic/Value-Based leadership to be endorsed by all cultures, it may not always be the best method within every culture. By limiting the comparison of Texas A&M taught leadership theories to only the universally endorsed leader attributes (and not the culturally contingent attributes as well), a clear definition of the best leadership method for a given culture is not determined.

Table 3. The Cross-Section of Universal Positive Leader Attributes and Prevalent American Leadership Theories

Universal Positive Leader Attributes	Charismatic Leadership	Transformational Leadership	Style Approach (Task Behaviors)	Style Approach (Relationship Behaviors)
Trustworthy	X	X		X
Just	X	X		X
Honest	X	X		X
Foresight	X	X		
Plans ahead			X	
Encouraging	X	X		X
Positive	X	X		
Dynamic				
Motive arouser	X	X		
Confidence builder	X	X		
Motivational	X	X		
Dependable	X	X		
Intelligent				
Decisive				
Effective bargainer				
Win-win problem solver			X	X
Administrative skilled				X
Communicative	X	X		
Informed				
Coordinator				X
Team builder				X
Excellence oriented			X	

Universally Enforced Attributes

While the theories taught by leadership educators at Texas A&M prove to be very effective in an American context, Texas A&M educators should broaden the scope of their courses to include more universally endorsed leadership theories as well as and other culturally contingent theories, too.

Areas for further research include content analyses of syllabi for foundational leadership theory courses in the United States. Also, a content analysis of PowerPoints used for lecturing would prove helpful in quantifying exactly which theories leadership educators are teaching across the nation. In addition to content analyses, researching what textbooks are used at other universities for leadership education programs in the U.S. will help give greater understanding to which leadership theories are commonly taught in America.

Finally, further cross-cultural analysis of the universally endorsed leadership attributes would be helpful in more clearly defining what leadership behaviors are acceptable around the world.

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Helping Students Become Global Citizens: Successful Study Abroad Programs in the Iowa State University Department of Horticulture

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Abstract

Higher education is just one aspect of American society affected by globalization. Many colleges and universities, including Iowa State University, understand the need and accept the challenge of helping students become global citizens and thus, require an international perspectives course as part of their undergraduate curriculum. The Iowa State University Department of Horticulture has a long history of successfully offering study abroad opportunities. Since 1998, 326 students have participated in a study abroad experience offered by the department. These international experiences range from 12-day trips to semester long immersions in a service learning project associated with a school garden. In each case, students participate in a pre-trip preparation, the immersive experience in-country and a post-trip reflection. This structured approach has proven to be an effective pedagogy for preparing students, maximizing student and faculty investment and evaluating the effectiveness of study abroad offerings.

Introduction

Throughout the past 20 years, globalization of the curriculum has become increasingly important at colleges and universities across the United States (Acker and Taylor, 2000; Ford Foundation, 1997; National Association of State Universities and Land-Grant Colleges, Strategic Vision Committee, 2000; North Central Region Colleges of Agriculture Curricular Committee, 1989). By 2006, globalization had become such an important part of higher education that the U.S. Senate recognized the importance of study abroad programs and designated that year as the "Year of Study Abroad." The resolution states "...ensuring that the

citizens of the United States are globally literate is the responsibility of the educational system" (Durbin et al., 2005). To help meet their global literacy mission, many institutions of higher education include some form of an international perspectives requirement as part of the undergraduate curriculum (Crunkilton et al., 2003).

Although many institutions have long had an international perspectives requirement, how students use study abroad experiences to meet that requirement has changed dramatically in the past 60 years. For example, in 2003 only 7% of study abroad experiences were for the full academic year compared with an average of 72% in the 1950s and 1960s (Neppel, 2005). Recent literature suggests short-term study abroad experiences can still be a valuable learning opportunity for undergraduate students (Hovde, 2002). Examples of benefits attained from these short-term programs include: increased global and cultural awareness; opportunity for students to travel internationally who otherwise would be deterred due to cost, lack of self-confidence, or preparedness; and the ability to avoid class scheduling conflicts associated with longer term programs (Neppel, 2005).

Iowa State University encourages study abroad experiences as a means of fulfilling the university wide International Perspectives requirement (Iowa State University, 2013). Students can choose from a number of different programs across the university's colleges, including programs sponsored by the College of Agriculture and Life Sciences. The College of Agriculture and Life Sciences has a long history of providing an extensive list of study abroad opportunities and historically has a large number of student participants (Woteki and Acker, 2004).

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Department of Horticulture Study Abroad Opportunities

Study abroad has been an integral part of the undergraduate curriculum in the Department of Horticulture since the first course was offered in 1998. To date 326 students have participated in a variety of study abroad opportunities. Department of Horticulture study abroad programs are populated predominately by horticulture majors; however, any student on the ISU campus is allowed and encouraged to participate. Some of these study abroad programs are administered solely through the department while others are offered collaboratively with other departments in the College of Agriculture and Life Sciences. As a result of departmental study abroad efforts, new programs have developed which are longer in duration with enhanced opportunities for cultural and social emersion.

Study abroad opportunities offered through our department are in line with the University's strategic plan as they *"Provide a high quality student life that engages and challenges students to collaboratively learn, grow and succeed as resilient global citizens and involved alumni."* These study abroad courses also help students meet a College of Agriculture and Life Sciences student learning outcome by helping students learn to *"Describe the values and perspectives of cultures other than their own and discuss how they influence individuals' perceptions of global issues and or events."*

In addition to meeting institution goals, the department strives to provide a variety of learning opportunities to students so they can customize their undergraduate experience. Currently, departmental student study abroad opportunities are linked to five different courses and each is designed to provide a unique type of learning experience.

Hort 495: Horticulture Travel Course Preparation

This required course is intended as a pre-trip preparation for students who intend to register for Hort 496 (Horticulture Study Abroad) the following term. Topics include preparation for safe international travel, an overview of the horticultural/agricultural industries, climate, crops, economics, geography, history, marketing, soils, culture, traditions and horticultural/agricultural development aspects of the country to be visited.

Hort 496: Horticulture Study Abroad

This 3-credit course includes a pre-trip preparatory course (Hort 495) and a 10-14 day in-country experience led by a team of two to three departmental faculty. Since 1998 students have learned about and traveled to, Austria,

Hungary, England, France, Greece, Netherlands, Italy, Ireland, Norway, Sweden and Scotland.

Hort 511: Integrated Management of Tropical Crops

Upper level undergraduate and graduate students completing this cross-listed 3-credit course learn principles and applications of integrated tropical crop management through interdisciplinary content of horticulture, plant pathology and entomology. Students then observe integrated management practices used in tropical crop production by traveling for 10 days in Costa Rica as part of the study abroad experience. They use new knowledge acquired through experiential learning in Costa Rica to further develop a semester-long research project.

Hort 496/An Sci 496: Agricultural Production, Processing and Marketing in Ukraine and Bulgaria

This three-credit course includes a pre-trip preparatory class and a 10-14 day study abroad experience led by a team of horticulture, animal science and agronomy faculty. The course objective is to provide students the opportunity to experience the agriculture and emerging market economies of Ukraine and Bulgaria and to gain an appreciation for the history and culture of these countries.

Globe/Hort 494A: Service Learning School Garden Program in Uganda

This four-credit course to Uganda includes a combination of service and learning. Course learning outcomes are related to evaluating a food and agriculture focused project in Uganda. Students identify the complex issues surrounding hunger, poverty, water and health and how these issues impact the education and lives of elementary school children and their families. ISU students and faculty partner with students and faculty from Makerere University and a nongovernmental organization in Uganda. They live, work and learn together for five weeks in the Kamuli District, which is food insecure and where most children suffer from malnutrition and related disease.

Hort 494: Service Learning in St. John

Since 2010, ISU has partnered with Gifft Hill School on St. John in the U.S. Virgin Islands to provide a school gardening/service-learning program known as the EARTH Program (Education And Resiliency Through Horticulture). The program goals include: developing a landscape to serve as an outdoor learning laboratory; producing food used by the school; and integrating

horticulture, environmental science and health and nutrition into the middle school curriculum. This is a semester-long variable credit course with most students earning 2-4 credits.

Evaluation of Hort 495/496

Developing and implementing rich international learning and travel experiences is a resource intensive endeavor. It requires a significant amount of faculty time to design the pre-departure course to ensure students are prepared for the travel experience. Organizing the in-country logistics including transportation, housing, meals and destinations for a group of 20 students also requires a substantial amount of time, even when working with university and country-based travel professionals. To help determine if continuing to offer these resource intensive courses was a wise use of resources, the two longest running (14 years) study abroad courses in the Department of Horticulture were evaluated. In 2007, VanDerZanden et al. completed a comprehensive evaluation of the pre-trip preparatory course (Hort 495) and the in-country experience (Hort 496). The research goal was to evaluate the courses to determine if they were meeting university and college expected learning outcomes and competencies in international and multicultural awareness as a means to support the resources being used to offer the courses.

To summarize the VanDerZanden et al. 2007 research, a 23-question survey instrument consisting of 13 open- and 10 closed-ended questions was mailed to 116 former Hort 495/496 participants. Survey questions were designed to gather information on student demographics, previous international travel experience, learning outcomes achieved through participation in the pre-trip preparatory class and the in-country experience and how these experiences influenced career development. Forty-three percent of the questionnaires were returned and were usable. Responses indicated that both the pre-trip preparatory course and the in-country experience helped participants achieve the course learning outcomes.

The Pre-trip Preparatory Course

Recent research by Barton et al. (2009) and Andrews and Henz (2009) support the importance of a structured pre-departure course and the positive impact it can have on students' preparation for the study abroad trip and subsequent learning experiences. The pre-trip preparatory course (Hort 495) meets for two hours each week during the 15-week spring semester prior to the end-of-semester trip abroad. Although the content of this course varies from year to year, the course learning outcomes are to: introduce students to the culture, history and horticultural contributions of the country/

region to be visited; emphasize the importance of being safe and responsible travelers; and build a sense of *esprit de corps* among students and faculty leaders. To accomplish this goal class sessions include discussions on the history, music, food, agriculture, horticulture and other topics pertinent to the destination country. Often these discussions are led by individuals native to the destination country or by individuals who have lived there for an extended period of time.

Students also take an active role in their learning through two presentations they deliver as part of the course. The first presentation is a five-minute overview of a site the class will visit. It could be a historical or cultural site, a botanic garden, or a horticulture enterprise. The goal is for students to become familiar with the planned itinerary before leaving the U.S. As a result of this assignment, each student becomes the 'expert' for one of the stops on the trip. Students also complete a research paper and deliver a 5-10 minute companion presentation on a topic of interest related to the country/region to be visited. This provides students an opportunity to learn in depth about a topic that is of particular interest to them. Because we often have students with a mix of majors and backgrounds, these presentations allow students to learn more broadly about the country to be visited and about the interests of their fellow travelers.

One of the most important goals of the pre-trip preparatory course is team building. Because students will be immersed in a fairly intense experience, team building with classmates is essential. Through the years a variety of team building exercises have been implemented including luggage Olympics, a campus scavenger hunt and charades using language/slang of the country to be visited. This last exercise helps with their communication skills while in-country.

A final component of the pre-trip course is to help students prepare for international travel (e.g., obtain a passport, travel safety, deal with a foreign currency, etc.). Expectations for personal and group behavior are also described and reinforced throughout the course.

In the research by VanDerZanden et al., (2007) students were asked to list the "most immersing" elements of the pre-trip course. This information is summarized in Figure 1. Students were also asked self-efficacy questions related to personal growth as a result of the pre-trip course (Table 1). Many students agreed or strongly agreed that the course positively affected their personal growth.

The Study Abroad Experience

Each Hort 496 in-country experience emphasizes the unique horticulture and agriculture aspects of the country being visited, as well as sites of historical and cultural

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Table 1. Mean Rating Related to Personal Growth for Hort 495 a Pre-Trip Preparatory Course (N=45)

Each statement started with "As a result of the pre-trip preparatory course I..."	Mean rating ^z
increased my knowledge of another country.	4.77
would like to learn more about different cultures.	4.65
am more aware of the diversity of different cultures.	4.54
improved my ability to work as part of a group.	4.00
improved my problem-solving skills.	3.64
improved my oral communication skills.	3.64
improved my written communication skills.	3.16

^zRatings are based on a 5-point scale where 1=strongly disagree and 5=strongly agree.

Figure 1. Percentage of responses for the 'most immersing' experience associated with the pre-trip preparatory course (Hort 495).

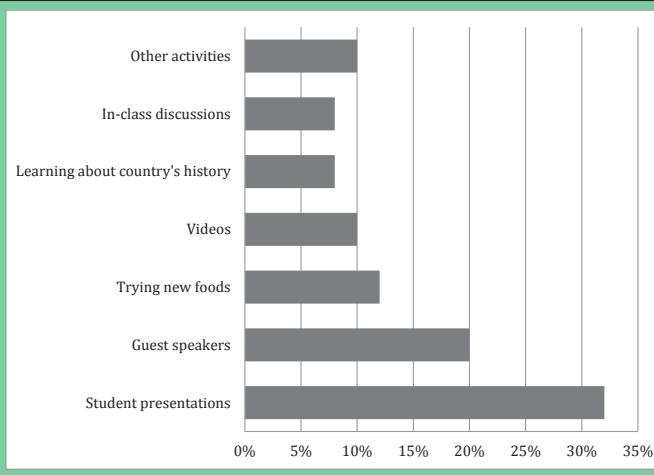
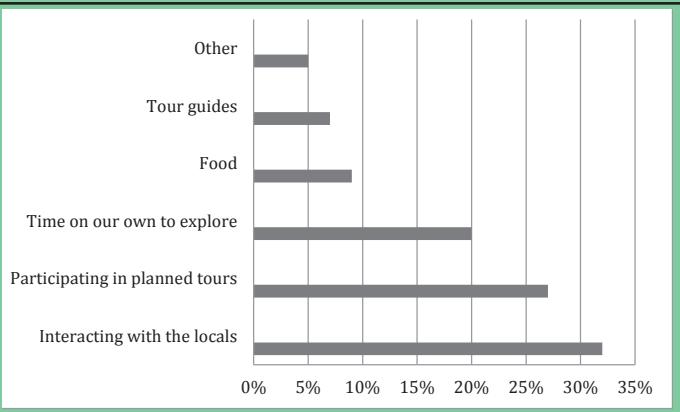


Figure 2. Percentage of responses for the 'most immersing' experience associated with the in-country experience (Hort 496).



significance. A typical trip format includes two to three days in a major city, with day trips to nearby sites such as production greenhouses, farms, botanical gardens, golf courses and historical or cultural sites. Often each of these day trips includes one or more planned tours and students typically have a free afternoon or evening in each city to explore on their own. This format provides a good mix of structured activities while still allowing students some autonomy in personalizing their international experience.

VanDerZanden et al. (2007) reported that students found interacting with the locals (chatting with locals

at a pub, visiting people's homes, talking to university students and everyday interactions that occur as a result of shopping, eating and using public transportation) and participating in planned tours to be the most immersive components of the in-country experience (Figure 2).

Summary

Based on the research completed by VanDerZanden et al. (2007) the current configurations of the pre-trip departure course (Hort 495) and the in-country experience (Hort 496) offered through the Department of Horticulture at Iowa State University are meeting university and college learning outcomes and expected competencies for international and multi-cultural awareness. Equally important is that students reported how much they valued their experiences with the courses including the opportunity to experience a country firsthand and the personal growth that occurred as a result. On-going evaluation is being completed relative to the other study abroad opportunities offered through the Department of Horticulture and results are showing a similar level of effectiveness and student satisfaction. The variety of study abroad opportunities offered through the Department of Horticulture can serve as a model for others interested in providing rich, diverse and life changing international experiences for their students.

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A Model for Service Abroad Courses: Agricultural Development in Sierra Leone

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Abstract

Employer demand for graduates with international and cross-cultural project management experience has been steadily increasing. To meet this need, an agricultural development service abroad course was designed. University students involved in the program came from various backgrounds with limited or no international travel experience and were placed into three separate groups according to their degree field and interest; agricultural production, nutrition and economics and bio systems engineering. The goals for this course were three-fold; first, to introduce appropriate technologies into a community to improve sustainable food security for local populations; second, to place American university students within a learning environment where they were required to use their knowledge and skills to achieve an objective with limited resources; and third, to introduce American students to the challenges and opportunities in international development. Within these groups, students designed and developed projects for a local orphanage with the overall goal of demonstrating to the community how to increase living standards in a sustainable manner using local resources. American students implemented nutrition, agricultural production and water projects and worked with children from the orphanage to determine local needs to modify projects. Each group was responsible for using the platform of their project to increase the children's understanding of applied science, math and engineering concepts through experiential learning techniques. Upon returning from the trip, five of the students have continued and expanded their respective projects with a return service-abroad trip to Sierra Leone, creating a social venture working in Sierra Leone and being awarded a Fulbright Fellowship to research in Sierra Leone.

Introduction

Globalization is drawing more and more students to study abroad each year. In the last two decades, students participating in study abroad programs has tripled (IEE, 2012). The study abroad experience is viewed as valuable to many industry managers and hiring personnel (Trooboff, 2007) as more and more graduates are finding jobs in multinational and internationally focused organizations (Dwyer, 2004).

Traditionally, study abroad programs consisted primarily of stays in country longer than 8 weeks (Dwyer, 2004), but recent trends indicate that between 2009 and 2011 over 50% of study abroad students participated in programs of less than 8 weeks in duration (IEE, 2012). With this shifting towards shorter-term programs, it has been found that students are still gaining valuable skills and lessons that were previously seen as unique only to long-term programs. Recent research has indicated that students gained confidence in working in challenging and diverse cultural environments (Dwyer, 2004), developed a personal global perspective (Daneshyar, n.d.) and increased their self-confidence (Pence and Macgillivray, 2008) while working in an international context.

With \$141 billion in agricultural exports and \$102 dollars of agricultural imports in the 2012 calendar year, agriculture is not exempt from globalization for the U.S. (USDA, 2012). Agriculture students are also not exempt from the need to gain international exposure and the subsequent personal and professional benefits mentioned above. However, of the study abroad courses offered in the U.S. only 1.3% of them were focused on agriculture (IEE, 2012). Additionally, less than 6% of study abroad courses took place in Africa (IEE, 2012). With over 70% of the African population involved in agriculture (Sanchez, 2002), as well as the vast opportunity to

increase agricultural production in Africa, it is of great value to increase the number of agriculturally related study abroad courses in Africa.

Sierra Leone

Sierra Leone is a country in the western part of Sub-Saharan Africa (SSA). After an eleven yearlong civil war ended in 2002, many organizations have been actively working to increase food security while helping to rebuild infrastructure throughout the country. Over half of the working-age population takes part in subsistence agriculture (CIA, n.d.). However, indigenous knowledge of proper agriculture production techniques is lacking due to the tragedies occurring during the civil war due to entire farming communities being displaced as well as generations and their agricultural experience lost as casualties of the war. Additionally, poor infrastructure and inadequate access to education has added to food insecurity. This represented an opportunity for students learning agricultural science to use their skills and knowledge to help others improve their lives.

With this in mind, an agricultural development service abroad course was developed for students at Oklahoma State University. The objectives for this course were three-fold; first, to introduce appropriate technologies into a community to improve sustainable food security for local populations; second, to place American university students within a learning environment where they were required to use their knowledge and skills to achieve an objective with limited resources; and third, to introduce American students to the challenges and opportunities in international development.

Course Design

For a successful service abroad course, it is imperative to establish working relationships with local organizations with like-minded goals. For this course we worked with a local non-government organization (NGO) that operates an orphanage in the country's capital of Freetown. This local NGO had just acquired a large compound in the small community of Waterloo on the outskirts of Freetown that all stakeholders wished to be used for agricultural training and food production. This compound served as the location for much of the service abroad course activities. The group also worked with various U.S. based NGO's that have temporary or permanent presence in Sierra Leone. The trip was 14 days in length and took place over the student's spring break.

Nine students participated in this course with two instructors. Six graduate and three undergraduate students participated in this course, which was led by two professors experienced in agriculture projects in

Africa. The students came from diverse backgrounds, international exposure and majors.

Pre-Departure

Leading up to the experience, three group meetings were held to establish a relationship within the group as well as to determine possible project ideas. During these meetings, students and faculty who have previously worked in Sierra Leone introduced students to a brief background of Sierra Leone and its culture. Students were given full discretion in choosing their proposed projects within the overall mission of agricultural development. After the first couple of meetings, the students began to separate into groups according to their project ideas, which seemed to be influenced by their current major. The three groups established were food production, nutrition and economics and biosystems engineering.

Students then held informal meetings with their respective groups to discuss project plans and collect necessary supplies. Students working on food production attended training for water and soil testing using low-input analytical tests while the biosystems group attended training on drilling water wells in developing countries using local supplies.

In-Country Agricultural Production

The agriculture production group made it their goal to increase food security for the orphanage by teaching them to produce their required food. To do so they taught soil testing, soil and water conservation techniques, composting and how to install and maintain drip irrigation. The OSU students taught basic science and math lessons using the project according to theories of experiential learning proposed by Kolb (1984).

Nutrition and Economics

Students in the nutrition and economics group surveyed the local and regional markets to collect samples of all available foods, evaluated market prices to determine the best location for the orphanage to purchase additional food and determined food preferences. This was carried out to insure that the food purchased was bought at the best price possible. Based on availability, cost and preference a least cost diet was created and used to assist in determining the garden contents.

Biosystems Engineering

The biosystems engineering group focused on improving the infrastructure (water, energy and sanitation needs) of the compound and worked with a U.S. based NGO to drill a well site for a local school. While the well

A Model for Service

was not for the orphanage, children from the orphanage worked with the group and learned basic engineering principles while giving their time to help others gain access to clean water.

Impact

While no formal surveys were distributed to students after the experience, each student was interviewed by a state-wide news program producing a brief documentary of the work being done in Sierra Leone (McClendon, 2011). In addition to these post-trip interviews, the impact of the course is evident in each of the students' continued involvement in projects in Sierra Leone as well as future career and educational endeavors.

When asked how this trip impacted them, students responded in many different ways. One student commented that he is, "now the guy who has seen the hope in Africa and tells everyone he knows about it." Another student commented that the realization that she has an unlimited variety of opportunities while the local people in Sierra Leone face few opportunities, even for the brightest, was a "life changing" experience that would propel her to be more judicious in pursuing options. Almost all students remarked about the new perspective they have found of the unique opportunity granted to them through a college education and also that they want to use this more to help others in the future.

Upon returning, nearly every student participated in the development of the next Sierra Leone service abroad course and recruited 23 students. One student created a social/business venture that attracted multiple investors in the U.S to invest \$150,000 in start-up capital. He now lives in Sierra Leone and operates one of the largest pineapple plantations in the country while providing jobs and training in sustainable agriculture production. In addition, he is continuing his education with a graduate degree in International Studies. Two other students from this course work with him and one has moved to Sierra Leone in order to help market the farm's products for export.

Another student was awarded a Fulbright Fellowship that allowed her to live in Sierra Leone for one year while studying rainwater harvesting techniques that could potentially provide clean drinking water to many in the rural parts of Sierra Leone. She also still helps in drilling wells. Another student returned to Sierra Leone four times and received a grant from the Oklahoma Conservation Society to design, build, install and monitor sand bio-filters in schools throughout Sierra Leone. She will be leading the Sierra Leone service course in 2013. From the initial sand bio-filters project during one of the Sierra Leone service courses, one of the Engineering Without Borders (EWB) students received a Wentz

research fellowship to pursue the redesign of the sand bio-filter vessel based on concepts learned from a local craftsmen and materials common in Sierra Leone. He is a finalist for the Udall Scholarship and if received will use this to further his attempts to develop these water filters from local materials in Sierra Leone.

Conclusion

Evidenced by student responses in their interviews as well as their continued action to work on projects in Sierra Leone this course indeed had a powerful impact on their world perspective and the role they can play in agricultural development. A key component of the success of this course was the student ownership and autonomy of each of the three projects selected. Not only did this facilitate great involvement in the course, it also created a lasting responsibility felt by the student to continue the project.

Recommendations for courses such as this would be structured meetings for reflection of the impact of the trip upon return. This could aid students in better understanding the experience they received and provide skills for portraying this to family, friends and other students not having similar experiences.

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Exploring Attitudes and Beliefs of Current and Future Agricultural Teaching Faculty Prior to an International Professional Development Experience

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Abstract

Graduates of higher education institutions increasingly function in globalized contexts, especially students of agricultural and life sciences. Faculty who undertake experiences abroad can internationalize their curricula to present students with global perspectives. However, prelection prior to travel is important to identify pre-existing perceptions, attitudes and beliefs to enhance the international experience. This study explored the prelection of current and future agricultural teaching faculty engaging in study abroad to Belize. Seven faculty and doctoral student pairs ($n = 14$) completed a questionnaire describing (1) attitudes/beliefs about visiting Belize and (2) attitudes/beliefs about Belizean culture. Emergent themes were identified using the constant comparative method. Themes from question one included general excitement, travel expectations and environmental expectations. Themes from question two were cultural, socio-political and environment and resource-based attitudes/beliefs. Overall, prelection showed biases or knowledge gaps, which allows trip planners to improve the participants' experiences. Replication or follow-up investigation during the international experience can enhance this research.

Introduction

Globalization has increased the demand that graduates of all colleges, including agricultural and life sciences, be prepared to work in a globally directed society (Gibson et al., 2012; Gouldthorpe et al., 2012a). Institutions of higher education are increasingly required to produce graduates capable of functioning in a global

context (National Association of State Universities and Land-Grant Colleges [NASULGC], 2004). This trend is especially true in agriculture where international cultural, social and political issues impact trade and food production (Brooks et al., 2006; Bruening and Shao, 2005). However, strategies and efforts to internationalize educational programs often vary. The National Research Council [NRC] (2009) identified two major models for preparing globally-competent graduates: (a) by improving access to international experiences for students and (b) by incorporating international elements into curricula.

Many institutions primarily responded by increasing study abroad opportunities (Brooks et al., 2006; Crunkilton, 2003; Dooley et al., 2008) and student participation has tripled in the past twenty years (Institute of International Education [IIE], 2010). Despite this increase, fewer than 1 % of students study abroad every year (National Association of International Educators [NAFSA], 2003) and agriculture students are the least represented (Bruening and Shao, 2005). As a result, study abroad alone has not adequately internationalized higher education (Moore et al., 2009), which still lacks the depth and breadth to prepare students for the challenges they face upon graduation (Green et al., 2008).

The second strategy advocated by the NRC (2009) involved internationalizing the curricula. Faculty members are in a unique position to modify the curricula (Lunde, 1995) and have been central to the incorporation of global elements (Association of International Education Administrators [AIEA],

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Exploring Attitudes and Beliefs

1995). Russo and Osborne (2004) asserted that faculty efforts to incorporate global topics into their teaching were the second most effective method of creating globally-competent graduates behind only study abroad experiences. Incorporating global topics and perspectives into agriculture and related courses can also help to create meaningful learning experiences for students. According to Doerfert (2011), “*The role of the teacher in meaningful learning is to move from being the sole source of knowledge to becoming a facilitator of a holistic learning environment and engaged learning process*” (p. 21).

Navarro (2004) determined that efforts by faculty to internationalize curricula required opportunities for training/professional development and international experience. Faculty study abroad allows for individual transformation that cannot be achieved by other means (Gouldthorpe et al., 2012a; Sandgren et al., 1999). This transformation influences their teaching, encouraging them to interweave their experiences into their courses. Faculty who possess and share international experiences with their students provide an extra dimension to internationalize their courses (Bruening and Shao, 2005). Institutions committed to internationalizing curricula must support and incentivize international professional development and remove the barriers that often prevent faculty from engaging in these opportunities (Dewey and Duff, 2009; Navarro, 2004; Russo and Osborne, 2004). The need for faculty to undertake international experiences remains essential (Childress, 2009; Schuerholz-Lehr et al., 2007). Institutions must support curricula internationalization and enhancement (Robson and Turner, 2007; Van Gyn et al., 2009). In order to better prepare faculty to engage themselves during the international experiences, more needs to be understood about preparing faculty to be learners.

One strategy to help faculty globalize their courses is to enhance their own understanding of global aspects of their disciplines through experience and professional development. In the Teaching Locally, Engaging Globally (TLEG) projects (Harder, 2009; Harder, 2011), current and future teaching faculty participate in short-term international experiences with the goal of gathering information to create reusable learning objects (RLOs) that can then be used in on-campus courses (Harder, 2011). Although a longer-term immersive experience might be desirable, many current and future faculty cannot dedicate more than a limited amount of time to such an activity. Given the time constraints for these experiences, providing high-quality learning opportunities that go beyond academic tourism is critical (Gibson et al., 2012). Even a short-term in-depth immersion “produces a qualitatively different type of

globalization of the curriculum and a more enduring change” (Sandgren et al., 1999, p. 54).

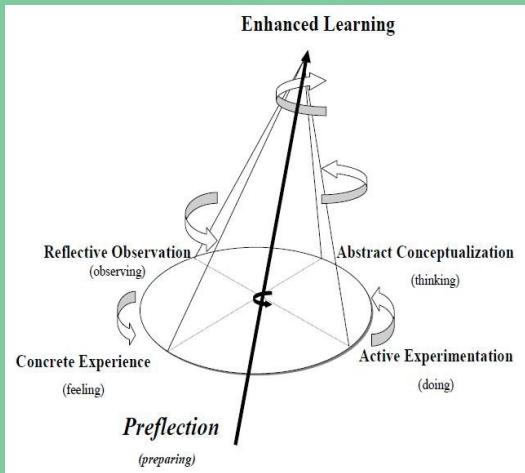
As short-term international faculty experiences are being planned, understanding thoughts and perceptions related to the specific context in which the experience is to occur is essential (Gouldthorpe et al., 2012b; Harder et al., 2012). These insights can lead to the establishment of best practices that meet the research, course creation and professional development needs of individual faculty members. Applying best practices will enhance the faculty experience and ultimately maximize the potential for impacting students upon return to campus.

A constructivist epistemology and theoretical framework are used for this study and the overall TLEG model. Constructivism is commonly applied to learning contexts and is guided by the belief that learners construct meaning from their experiences (Gergen, 1995). According to Doolittle and Camp (1999), “*constructivism acknowledges the learner’s active role in the personal creation of knowledge [and] the importance of [the] experience (both individual and social) in this knowledge creation process*” (p. 6). Piaget (1964) also suggested that learning and the formation of meaning move through a process of adaptation and organization, while Dewey (1938) advocated allowing learners to independently develop meaning from experience. Kolb’s (1984) experiential learning model described this learning process as ongoing and guided by experience, observation, conceptualization and experimentation. Reflection on prior experience allows learners to build on previous knowledge and is another fundamental component to the experiential learning cycle (Kolb, 1984).

While Kolb’s (1984) model typically begins with experience, Jones and Bjelland (2004) proposed the use of a pre-reflection phase prior to the activity itself. This stage is termed prelection and defined as “the process of being consciously aware of the expectations associated with a learning experience” (Jones and Bjelland, 2004, p. 963). Prelection allows learners and educators to identify and examine biases, preconceptions and attitudes they might have prior to learning activities or experiences. Prelection is meant to create a bridge between thinking about an experience to actually learning from it (Figure 1).

Since international experiences are used to prompt learning, pre-existing biases, preconceptions and attitudes must be understood before departure to allow for a more rich and meaningful experience. Thus, identifying pre-existing conditions that may impact participants’ learning within the TLEG experience is important (Gouldthorpe et al., 2012b). Furthermore, Harder et al. (2012) found that “*a preflective activity*

Figure 1. Preflection model of experiential learning. Adapted from "International Experiential Learning in Agriculture," by L. Jones and D. Bjelland, 2004, Proceedings of the 20th Annual Conference of the Association for International Agricultural and Extension Education, Dublin, Ireland, 20, 963-964. Reprinted with permission.



can be used to build substantive theory and increase understanding of pre-trip beliefs of faculty" (p. 15).

Previous research examining international experiences of faculty was also reviewed to provide background for this study. Through the use of prefection, Dooley et al. (2008) identified expected gains from participation in an international experience. Five anticipated gains were found: (a) encouraging collaboration and contacts with foreign colleagues, (b) contribution to academic practices, (c) knowledge gain about foreign cultures and university systems, (d) recruitment of students and (e) building lasting and meaningful relationships with other faculty. Dooley and Rouse's (2009) examination of the long-term impacts of an international experience on faculty found that participants expanded their curriculum through the incorporation of personal stories and experiences as a result of their faculty study abroad.

Faculty that engage in study abroad experiences enhance both self-awareness and social awareness through immersion in the culture (Sandgren et al., 1999). Sandgren et al. (1999) examined the effects of study abroad on faculty members and created a casual model demonstrating the ties between the experience, self-awareness, social awareness and ultimately their teaching. Faculty identified increased awareness in recognition of an aspect about themselves before participation, "leading them to reflect on this part of themselves for the purpose of changing or confirming their sense of self" (Sandgren et al., 1999, p. 49). Similarly, the experiences served to increase social awareness in faculty. These gains in self- and social-awareness led to the transformation of their teaching. There were expressed changes in "course content (e.g., examples from the trip used in class), teaching techniques

(e.g., using more group work), philosophy of teaching (e.g., less authoritarian teaching), or interactions with students (e.g., greater sensitivity to various students)" (Sandgren et al., 1999, p. 49).

After a short-term study abroad in Ecuador, Gouldthorpe et al. (2012a) identified tangible changes in the knowledge, attitudes, skills and aspirations of current and future teaching faculty participants. Respondents showed increased knowledge and improved attitudes about the host country. High aspirations to incorporate international topics into teaching, research and extension appointments were also found. Additionally, the experience enhanced faculty participants' understanding of research processes, helped identify potential new research topics and improved the ability to communicate about foreign cultures.

Various studies have also identified barriers preventing faculty from engaging in international opportunities (e.g. Andreasen, 2003; Dooley et al., 2008). Andreasen (2003) separated these into external and internal barriers. The external barriers included lack of time, financial constraints, lack of language skills, difficulty leaving current research and lack of administrative support. Andreasen (2003) recommended that "*The reduction or elimination of the external barriers to participation should be examined in order to insure that there are competent, skilled professionals willing and able to carry their institutions' missions to other countries*" (p. 68). Examining internal barriers was equally important, which included fears about a different culture and political unrest, ethnic prejudices and cultural biases and a sense of "American Superiority" (Andreasen, 2003, p. 67).

Although there has been much research conducted pertaining to faculty international experiences, still more needs to be done to better prepare current and future faculty to overcome the barriers and have more engaged and meaningful experiences. Through maximization of these experiences, faculty will be able to enhance and internationalize their curriculum in lessons. Dooley and Rouse (2009) stated "*It is anticipated that these enhancements will encourage students to pursue study abroad or engage in international/culturally inquisitive scholarship and enrichment*" (p. 55). According to the NASULGC, "*advances in technology and telecommunications and a remaking of the global economy have created a world in which interdisciplinary, cross-border research and discovery are the norm and expectations for students prepared to live, work and contribute to an interconnected world are high*" (NASULGC, 2004, p. vii). Ultimately, colleges and universities are set with the task of preparing students to engage and succeed in a global work environment.

Exploring Attitudes and Beliefs

The purpose of this study is to explore the pre-existing perceptions, attitudes and beliefs of current and future agricultural teaching faculty participants prior to an international field experience in Belize. Specifically, the research questions were: (a) what are participants' pre-trip attitudes and beliefs about visiting Belize and (b) what are participants' initial attitudes/beliefs about Belizean culture?

Methods

The study was conducted as a generic qualitative design. Merriam (1998) defined generic qualitative studies as those that seek to "discover and understand a phenomenon, a process, or the perspective and worldviews of the people involved" (p. 11). This study described respondents' pre-trip beliefs and attitudes (preflection) prior to an international experience in Belize, thus qualitative design was deemed appropriate.

The population of this study consisted of faculty and doctoral students in the College of Agricultural and Life Sciences at the University of Florida pre-selected for participation in an international field experience in Belize. A total of 14 participants engaged in this program, composed of seven faculty and doctoral student pairs representing the departments of Agricultural Education and Communication, Agronomy, Fisheries and Aquatic Sciences, Forest Resources and Conservation and Wildlife Ecology and Conservation. Gender participation was equal, with seven male and seven female participants.

To facilitate transferability of the results from this study, providing a context for the experience is important. The activities described in this study are part of a Higher Education Challenge Grant project funded by the United States Department of Agriculture designed to enhance the quality of undergraduate education in agriculturally related programs. The specific experience was designed to give current teaching faculty ($n = 7$) and their doctoral student partners (future teaching faculty, $n = 7$) an international experience framed around a common issue, climate change in Belize in this case. Each pair was asked to use the international experience as the basis for creating curricula materials (reusable learning objects, RLOs) to use in their courses that seek to explain how climate change issues are affecting Belizeans.

Data were collected face-to-face through a written questionnaire administered to participants during a monthly planning meeting. Participants were asked to complete a questionnaire with four questions. Two of the open-ended questions

formed the basis of this study. Participants were asked (a) to describe their initial attitudes/beliefs about visiting Belize and (b) to describe their initial attitudes/beliefs about Belizean culture. The instrument was adapted from the work of Dooley et al. (2008), Harder et al. (2012) and Wingenbach et al. (2006). The questionnaires were completed individually with the researchers acting as facilitators. Three participants who did not attend the meeting were furnished the instrument via email and/or hard copy to complete independently. Non-response was addressed through follow-up emails at one-week intervals after administration of the instrument. All of the target participants ($n = 14$) provided data for this study. Human subject's clearance was approved by the University of Florida institutional review board and participants provided written informed consent.

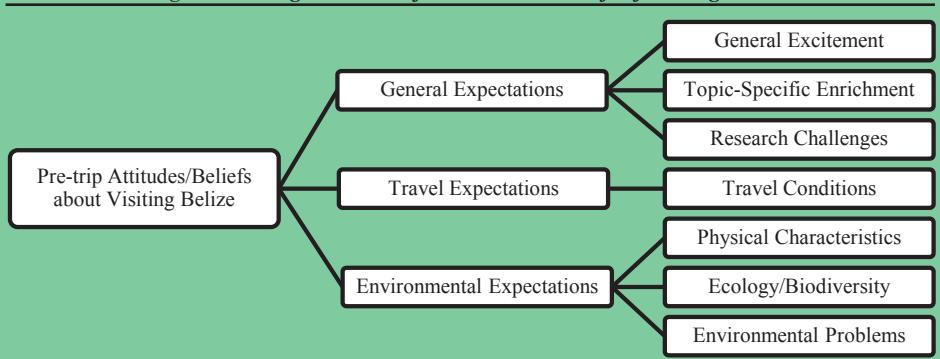
Data analysis was conducted using the constant comparative method, which identifies similarities, differences and conceptual links within the data (Merriam, 1998). Responses were coded to remove identifying markers. Emergent themes were identified from within the preflection responses (Lincoln and Guba, 1985). The results of the preflection study were grouped according to the two research questions. The data from each research question were broken down by emergent theme, which was further divided by sub-theme. Data triangulation and member checking were used to increase the internal validity and reliability of the study (Lincoln and Guba, 1985; Merriam, 1998).

Results and Discussion

The first research question asked participants to describe their initial attitudes/beliefs about visiting Belize. Three themes emerged from the responses: general expectations, travel expectations and environmental expectations (Figure 2).

The general expectations theme incorporated respondents' overall objectives and goals for the field experience in Belize. Sub-themes of general excitement, topic-specific personal enrichment and research challenges were found. Excitement for new experiences, learn-

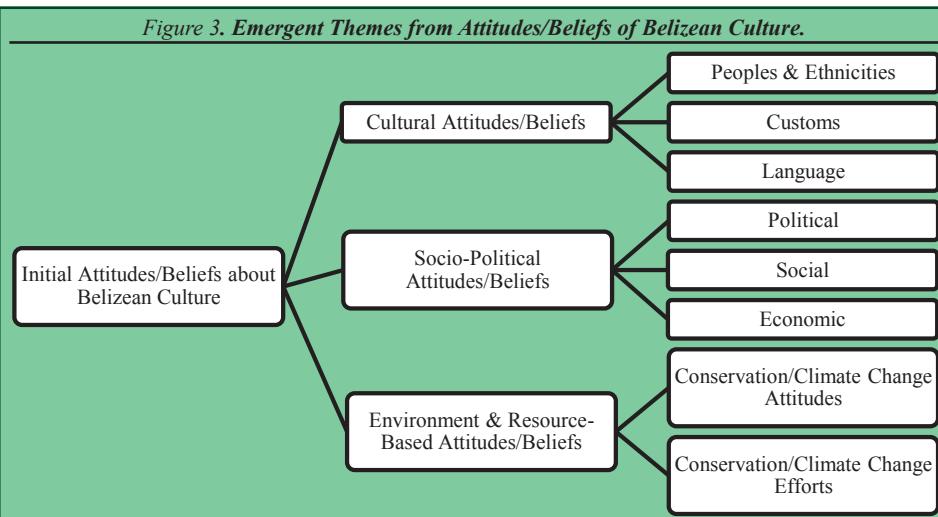
Figure 2. Emergent Themes from Attitudes/Beliefs of Visiting Belize.



ing about a new culture and love of travel were cited by multiple respondents. One respondent (R12) cited the potential of the experience to “shape my academic career” as a stimulus for excitement. Topic-specific excitement was also pervasive throughout the responses, although this largely aligned with the professional interests of participants. Excitement to explore unique Belizean ecosystems and natural resources (R02, R11, R13), to observe impacts of climate change (R08), to examine political impacts on development and conservation (R08, R11) and to learn about Belizean communities’ conservation and climate change efforts (R07, R08, R11) were also cited. Finally, expected research challenges were cited. One respondent (R01) described anxiety related to conducting research in another cultural context, while another wondered about “how willing the Belizean people are to share thoughts and perspectives” (R07).

The travel expectations theme illustrated respondents’ assumptions about in-country travel and logistics. Responses are broadly incorporated into the single sub-theme of travel conditions. Several respondents cited Belize’s reputation as a tourist destination as the foundation of their travel expectations for the experience. This assumption manifested itself several ways. First, respondents expected Belizean people to be friendly and welcoming of foreigners (R01, R04, R05) and thought Belizeans would “cater to us” during the field experience (R02). Second, the presence of English as a national language was viewed positively and respondents described the expected ease of conversation as making the experience more “comfortable” (R02, R11). However, one respondent (R07) did anticipate language barriers due to dialects in Belize. Third, respondents were split on the physical travel conditions expected in Belize. While several respondents felt it would be easy to travel in Belize (R04, R05) and expected safe food and “a modern country with clean drinking water and bathrooms” (R02), others expected travel in Belize to be limited by a “primitive infrastructure” (R08) and delays due to “island time” (R01).

Environmental expectations were divided into sub-themes of physical characteristics, ecology/biodiversity and environmental issues. Belize was described as a small country (R05, R06, R09, R10, R13), with “abundant natural resources” (R10), a hot and tropical climate (R02, R04, R06) and varied topographical characteristics (R04, R13). Respondents also expected



diverse ecological systems (R04, R05), high biodiversity (R05, R10) and “more endemic species than [state]” (R06). Environmental problems (climate change effects, flooding, etc.) were also cited (R08, R09, R10).

The second research question asked participants to describe their initial attitudes/beliefs about Belizean culture. Three themes also emerged: cultural attitudes/beliefs, socio-political attitudes/beliefs and environment and resource-based attitudes/beliefs (Figure 3).

The theme of cultural attitudes/beliefs covered a range of topics, grouped into the sub-themes of peoples and ethnicities, customs and language. Diversity characterized respondents’ beliefs about the peoples and ethnicities in Belize. While some responses indicated a belief in “huge” ethnic diversity (R05, R08, R09), others focused on specific ethnic groups. The interaction of English and Spanish peoples (R03, R08, R09, R11), the indigenous Mayan influence (R06, R11), the role of Caribbean (R02, R03, R08) and Guatemalan (R08, R13) groups, the integration of descendants from African slaves (R09) and the presence of Mennonite farmers (R09, R13) were all cited as ethnic and cultural influences present in Belize.

The perceived diversity of peoples led to responses centered on the diversity of Belizean customs. Respondents’ attitudes about Belizean customs were not always congruous. One respondent expected “a difference in social customs between inland and coastal people” (R04), while another expected more cultural homogeneity (R06). Likewise, respondents alternatively felt Belizean customs were “very different” from the rest of Latin America (R12) and “similar to other Central American countries” (R10). One respondent described a “very vibrant culture” (R05), while another suggested Belizean customs “are not as pronounced as in other areas or among other peoples with a longer history” (R03). Other attitudes about customs in Belize centered on the family-oriented nature of its people (R02) and a

Exploring Attitudes and Beliefs

religious climate that is more liberal, diverse and tolerant than in other Central American countries (R03, R04).

Attitudes on language focused on the use of English in Belize. Despite acknowledging large cultural diversity, most respondents felt English was likely the common language across the nation (R03, R04, R08, R09, R10, R12). One respondent asserted that “all Belizeans speak English” (R04) while another asked “how much of the country actually speaks English?” (R08). Others expected to encounter Spanish in certain areas of the highlands (R09, R11, R13) and Caribbean dialects (R03).

Respondents also discussed socio-political attitudes and beliefs of Belize, which are divided into political, social and economic sub-themes. Within the political issues sub-theme, respondents’ attitudes about the Belizean government were mixed. While political stability, effective democracy (R09) and low levels of political unrest (R11) were cited, other respondents expressed beliefs that the Belizean government was weak and not politically stable (R06, R10), corrupt and “self-serving” (R01) and ineffective in developing the country (R03, R06, R08).

Social expectations stemmed from the common belief that Belizeans were largely poor (R04, R06, R08, R11, R13). One respondent postulated that “urban areas are poor and filthy while rural areas are poor but clean,” suggesting poverty was pervasive throughout Belize (R03). Class gaps (R01), poverty-related crime (R04) and lower levels of formal education than in the United States (R06) were cited beliefs.

Economic beliefs about Belize centered mainly on the role of tourism and agriculture, although fisheries (R03, R09) and exported goods (R08) were other economic sources discussed. Respondents largely believed tourism was the driving force in the Belizean economy (R10, R11) and that the economy was dependent on that sector (R09). Agriculture was discussed as both an economic and social component of Belizean culture (R09, R11). Respondents believed that both modern and traditional farming methods were found in Belize, with one stating “we will probably encounter both types of people who make a living in Belize in very different ways” (R02). Others felt that Belizeans would possess a high level of agricultural vocational skills (R06) for modern operations, or that traditional farmers would use a whole-family model typical of farmers in other parts of Latin America (R02). However, despite some respondents’ perceptions of agriculture’s prominent role in the economy, food security issues were also believed to exist in Belize (R08).

The theme of environment and resource-based attitudes/beliefs was well-represented in the data. The data were divided into two sub-themes: conservation/

climate change attitudes and conservation/climate change efforts.

Several respondents believed that Belizeans were conservation-minded and that “a large emphasis on nature/conservation” existed in Belize (R03, R06). This emphasis stemmed from more cultural ties to nature than Americans (R06) and manifested itself as concern from communities (R07, R11), scientists (R03) and the government (R05). Beliefs about Belizean attitudes on climate change were less consistent. One respondent expected people in Belize to be better informed on climate change than Americans (R04). Another suggested a lack of climate change awareness or interest outside of the scientific community and that others had “more pressing societal issues to deal with” (R03).

These conservation and environmental awareness beliefs about Belizean attitudes were also represented in the conservation/climate change efforts sub-theme. One respondent cited Belize’s “progressive parks system” as an indicator that the nation was interested in sustainable development (R05), while another questioned the use of environmentally responsible behavior in policy (R11). One respondent felt that local challenges prohibited efforts to address conservation and climate change issues at the community level despite the desire by communities to act (R07), while another believed that Belizean resourcefulness was central to addressing these challenges (R01).

Summary

The broad purpose of this study was to explore the pre-trip perspectives of current and future teaching faculty on a study abroad program to Belize and six themes emerged from the data. However, an examination of the frequency and nature of responses showed that respondents were focused on three main areas that cut across these themes.

First, attitudes, beliefs and expectations of culture dominated the data and were generally more detailed and extensive. This trend was consistent with prior research about faculty experiences abroad (Dooley et al., 2008, Gouldthorpe et al., 2012a; Harder et al., 2012). Respondents often expressed strong and authoritative opinions on Belizean culture. Interestingly, these beliefs were sometimes polar opposites, including Belize’s homogeneity versus uniqueness in Latin America, safety/stability versus political instability/crime and modernity/development versus primitiveness. Respondents who cited prior experience in Latin America and even Belize demonstrated greater authoritativeness, yet attitudes and beliefs were still varied. In contrast, a small group of respondents were tentative in their responses, using qualifiers like “I have no previous knowledge of Belizean

culture but..." (R10) and "I do not have a mental image of Belizean customs although..." (R04). Additionally, elements of culture permeated the results from both research questions, despite the design of the instrument. General and travel expectations of the field experience were frequently qualified by discussions of cross-cultural interactions and challenges associated with traveling and conducting research in a different cultural context. Even responses about Belize's physical characteristics (topography, climate, etc.) were inevitably linked to how these factors affected the people of these regions.

This trend was interesting given that the majority (71.4%) of participants were natural scientists and the field experience was directly focused on issues of climate change. Yet respondents overwhelming emphasized culture and human dynamics, suggesting an interest in social science topics was the primary motivation for participation. Perhaps respondents were more comfortable with the technical aspects of their fields and were thus more concerned about human impacts and involvement. The desire to compare their own experiences and beliefs to those of Belizeans also appeared in the data through multiple statements comparing Belize to the United States and other more familiar cultural contexts. This finding is consistent with Andreasen (2003) who cited the tendency of participants to compare with their own culture. Harder et al. (2012) also identified a similar trend among faculty engaged in a field experience in Costa Rica.

Second, responses across both research questions and all themes closely aligned with the professional backgrounds of participants. Attitudes about travel to Belize frequently referenced ecology and biodiversity, while beliefs on culture included an emphasis on Belizeans' attitudes towards conservation and climate change. Although the instrument was open-ended, little discussion existed about personal enrichment outside of the context of professional development and climate change awareness. In their preflection study from an Ecuadorian faculty abroad experience, Gouldthorpe et al. (2012b) also found that respondents focused on professional development over personal enrichment.

Third, travel conditions were discussed in little detail and respondents who did address this theme indicated minimal trepidation related to the in-country travel conditions expected in Belize. The low emphasis on and expressed satisfaction with travel conditions stands in contrast to Andreasen (2003) and Dooley et al. (2008), who identified travel concerns for faculty in Latin American field experiences as a barrier for participation. Many responses cited the prominent role of tourism in Belize and English as the national language as factors that "make me more comfortable to travel there" (R02).

Belize's proximity to the United States and an expected high American presence may have also served as causal factors. As a result, responses tended to focus on other aspects of the field experience and perhaps this explains why so much focus was given to culture and other topics.

This study has implications for both practice and research. Practically, conducting a preflection exercise allows participants to more closely examine and formalize their attitudes and opinions of the field experience and cultural context. The analysis of the preflection responses also serves to identify any preconceptions or biases that might impact their time in-country (Gouldthorpe et al., 2012b). Ultimately, this step improves the quality of learning experienced by participants, as demonstrated by Kolb's (1984) experiential learning cycle and updated to include preflection by Jones and Bjelland (2004).

Preflection should be part of any international experience involving field work and travel in an academic setting. Similar activities have been conducted with other international faculty experiences and also with different academic audiences (Dooley et al., 2008; Gouldthorpe et al., 2012b; Harder et al., 2012; Wingenbach et al., 2006). Generating preflection attitudes and beliefs for in-class exercises that include international case studies, narratives, or other means at the undergraduate and graduate level may also be appropriate (Navarro, 2004).

Preflection data can also allow for international experiences to be better tailored to participants' needs, interests and expectations (Gouldthorpe et al., 2012b; Harder et al., 2012; Wingenbach et al., 2006). For example, participants frequently expressed interest in aspects of Belize relevant to their professional foci (e.g., ecology, wildlife sciences, social sciences) throughout pre-trip meetings and discourse. However, the pervasive interest in Belizean culture was a subtle and implicit theme that only came to the forefront through the preflection exercise. Planners could use this finding to provide additional cultural/contextual information to participants, perhaps through readings, speakers native to the host country, or other means prior to the field experience. Incorporating more activities that demonstrate culture during the trip might also be possible.

Additionally, the TLEG program is designed to enable current and future faculty participants to deepen their understanding of cultural contexts in order to produce teaching modules that provide international contexts to climate change education at the undergraduate level. Preflection offers an opportunity to explore participants' areas of knowledge, misconception, or ignorance. As noted, several of the emergent themes of this study contained polarized attitudes and assumptions. These existed across a range of themes, from physical

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characteristics and travel conditions to cultural and socio-political realities. Having these findings allows planners to identify key areas to provide information, incorporate activities and conduct knowledge-building exercises to address these gaps through either pre-trip or in-trip modifications (Gouldthorpe et al., 2012b; Harder et al., 2012). Understanding these elements prior to travel can allow for a more compatible, appropriate and meaningful experience to be constructed. In fact, the results of this study were used in planning and delivering the international field experience in Belize. Emergent themes from the data allowed study abroad organizers to address the identified misconceptions and knowledge gaps by providing additional cultural information and supplementary readings in pre-trip meetings to better prepare participants.

In terms of research implications, this study also has potential for both reproduction in other contexts and expansion. As discussed, the value of preflection exercises has been demonstrated for improving the quality of learning (Jones and Bjelland, 2004). In this case, the preflection themes were provided to current and future teaching faculty participants before the trip as part of the member-checking process. Participants informally reported that knowledge of the preflection results was useful in preparing for the trip and for in-country data collection. Specifically, the preflection results allowed participants to address and/or minimize biases that may have distorted the presentation of the culture and role of climate change in Belize in curricula materials. Potentially this could also improve the quality of the completed RLOs, which to date have been created by each faculty and doctoral student pair for implementation in undergraduate courses. However, additional research using this and other methodologies can create a greater understanding of the preflection process.

Furthermore, while this study stopped after identifying emergent themes from the preflection data, it is also recommended that future studies explore emergent themes in greater depth. Common responses or those that were particularly polarizing (e.g., cultural and socio-political expectations) could be explored through follow-up interviews, focus groups, or other means.

Additionally, research utilizing preflection should seek to include in-trip monitoring and post-trip evaluation (when feasible) to assess changes in perceptions and attitudes. This way, beliefs can be compared at different stages and framed by different components of the international experience. Participants should be encouraged to reflect on the rationale behind their beliefs and data could be gathered through journaling, semi-structured interviews, or other methods. Guiding questions could be built from the emergent themes

established by the preflection exercise or the original two research questions could be asked at different stages of the trip. A similar strategy was used with participants during the Belizean field experience. Focus groups were conducted using this study's research questions and preliminary findings did indicate changes in attitudes and perceptions, although further analysis is required.

A close approximation of the preflection instrument should also be used post-trip to identify attitudinal changes in participants as a result of the field experience and to assess the impact of the field work. Again, participants in the Belizean program completed post-trip reflections as recommended and data analysis is pending. It is recommended to also assess participants' reactions to the use of preflection in framing learning during the trip and/or the overall learning experience. Systematic research that includes preflection, in-trip reflection and post-trip reflection can better explore participants' perceptions of this and other international field experiences and demonstrate the value of this methodology for reproduction and use by other groups of participants within academia.

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Emerging Issues and Sustainability in International Agriculture: A Study Abroad Program to Vietnam

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Abstract

Extension educators, faculty and students must be prepared to function in a marketplace and society that is increasingly global in scope. Study abroad programs offer an opportunity for participants to experience and appreciate cultures from around the world. The objective of this project was to develop a study abroad program to Vietnam with an emphasis on the understanding of culture, opportunities and challenges in international agriculture as a means for improving students' and extension educators' ability to locally address global issues. A total of nine participants (four undergraduate students, four extension educators and one faculty member) traveled to Vietnam from March 1-March 10, 2013. The program consisted of site visits to local farms and industry operations as well as interaction with faculty and students at Hanoi University of Agriculture. Several cultural activities were also included throughout the visit. During spring semester 2013, students regularly met with faculty to discuss key issues related to climate change and international agriculture. Additionally, program participants completed the Intercultural Development Inventory (IDI) both before and after travel. The IDI provided information on the orientation of the group toward cultural commonalities and differences and evaluated the cultural competence of the group. Results indicated minimal change in the intercultural competence of the group, but did support an increased ability for the group to reach a consensus on how the group responded to perceived cultural challenges.

Introduction

By 2050, it is estimated that there will be between 9.2 and 11 billion people in the world (United Nations, 2005). In order to feed animal protein to this many

people at even current intake rates, global production of animal products will have to increase. Global animal protein intake rates are anticipated to increase between now and 2050 because as household income increases the amount of animal protein intake increases as well (FAO, 2009; Dyck and Nelson, 2003). At the same time, there are continuing global challenges to livestock and poultry producers, including access to international markets, global competitiveness and the impact of world politics. Solutions to U.S. problems may be found in other regions of the world. Much can be learned from those engaged in livestock and poultry production in other countries and then be adapted and implemented at operations in the U.S. that face increasing environment regulation. In addition, enhanced understanding of challenges and situations elsewhere in the world will improve the ability of U.S. agriculture to internationalize their own enterprises.

Extension serves a critical role in the implementation of technology for livestock and poultry production. Extension faculty, specialists and educators need to have knowledge and experience to provide education and guidance for production and markets. Extension staff must have access to new technology and information not just from scientists and peers within the U.S. but from scientists and peers all over the world.

In addition, undergraduate students studying agriculture must have an appreciation for the global issues facing agriculture. These students are the future of the industry and thus are critical to balance the success of livestock and poultry production with environmental challenges. Imparting global perspectives and experiences on students majoring in agricultural disciplines will help build the next generation that can form a link between

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production agriculture and the consumer while addressing environmental concerns. Hands-on opportunities such as study abroad programs offer in-depth experiences for undergraduate students that cannot be replicated in a formal classroom environment. Undergraduate students returning from study abroad programs are reportedly more interested in international affairs, friendlier toward people from other countries, more independent and more self-assured compared with peers who have not studied abroad (Hadis, 2005). Furthermore, students studying for a semester abroad may have greater intercultural proficiency, increased openness to cultural diversity and become more globally minded (Clarke et al., 2009).

Vietnam is not unlike many other tropical and sub-tropical regions of the developing world in that there is a strong desire to increase animal protein consumption through domestic production. National goals for 2020 include a 72% increase in meat production, a 218% increase in egg production and 327% increase in dairy production (Nguyen Tien Von, Hue University of Agriculture and Forestry, Vietnam; personal communication). At the same time, climate change in Vietnam poses a challenge in that a 100 cm rise in sea level corresponds to loss of land for 23% of the population. Yet this is a nation where 2007 per capita consumption of meat and milk was 20 kg and 3 kg, respectively (one-third of U.S. consumption) and most of this intake was imported. As Vietnamese animal agriculture expands, a unique opportunity is presented to work with and learn from the Vietnamese on environmental and social concerns related to large-scale animal agriculture production.

The primary objective of this study abroad program is to enhance the understanding of culture, opportunities and challenges in international agriculture as a means for improving undergraduate students' and extension educators' ability to locally address global issues.

Program Development and Implementation

In fall 2011, two faculty members from the Department of Animal Science at Michigan State University traveled to Vietnam for a five-day site visit. The primary objectives of this visit were to determine the logistical details to organize an effective study abroad program, develop relationships with colleagues and agricultural universities and establish connections with industry collaborators.

Based on the outcomes of this visit, a formal study abroad program was submitted and approved by the MSU Office of Study Abroad. It was anticipated that at the end of the program, students would be able to discuss global implications of environmental change on agriculture, understand the role of extension in modern

agriculture and enhance their professional and personal development. During fall 2012, undergraduate students and extension educators were recruited to enroll in the program. Recruitment included presentations at Extension meetings, participation in study abroad fairs and direct advertisement in key undergraduate courses within the MSU College of Agriculture and Natural Resources. Faculty at MSU worked closely with faculty and staff at Hanoi University of Agriculture to organize the program.

A unique feature of the program was the anticipated interaction between the undergraduate students and extension educators. Each educator had a unique area of interest. Previous experiences and interest of the educators allowed for a greater breadth of information to be covered on the program. Undergraduate students learned from the previous experiences of the educators as well as shared in the acquisition of new knowledge while traveling in Vietnam.

Four undergraduate students and four extension educators enrolled in the program. Students enrolled for three credits of ANS 480 (Animal Systems in International Development). The course regularly met on campus for 2 hours each week during spring semester 2013 and discussion was facilitated with a designated faculty leader. Topics discussed during pre-departure meetings included climate change, challenges to global food production, global food security, as well as issues related to cultural differences between the two countries. During the meetings, students and extension educators met to discuss expectations, goals and concerns they had prior to departure. This meeting was also used as time for the group to interact and begin to develop a relationship. Class meetings after the travel included reflective discussions, continued discussions on sustainability, as well as class presentations.

From March 1 through March 10, 2013 the four undergraduate students, four extension educators and one faculty leader from MSU Department of Animal Science traveled to Vietnam (Table 1). Three of the undergraduate students were juniors majoring in Animal Science and one student was a freshman who had not yet declared a major. Interests of the extension educators included crop, livestock and bioenergy production, food safety and environmental issues. The trip was designed to provide a general overview of agriculture in Vietnam as well as understand the nation's longer-term agricultural goals. In addition, the goal was for participants to gain an appreciation for the history and culture of the Vietnamese people because this may influence their agricultural practices and goals. Participants had the opportunity to interact with producers and visit several types of agricultural production, including farms with dairy cows, sows and laying hens.

Table 1. Itinerary for Vietnam study abroad from March 1 – March 10, 2013¹

Day	Activity
1.	Depart United States for Hanoi, Vietnam
2.	Arrive in Vietnam
3.	Cultural day: Organized city tour of Hanoi
4.	Visit with faculty and students at Hanoi University of Agriculture
5.	Site visits to poultry, pig, and fish farms
6.	Homestay at Mai Chau Village in Hoa Binh province
7.	Farm visits in Hoa Binh province
8.	Visit to dairy cattle farms
9.	Cultural day: tour of Ha Long Bay; depart for United States
10.	Layover: city tour of Seoul, South Korea; arrival in United States

¹Students met weekly for 6 weeks prior to departure and for 4 weeks upon return to MSU campus.

Program Objectives and Assessment

Assignments in the course were designed to evaluate the following course learning objectives: 1) to enhance student understanding of culture, opportunities and challenges in international agriculture as a means for improving students' ability to locally address global issues; 2) to promote student inquiry and scholarship around topics of personal, professional and academic interest; and, 3) to enhance students' skills and ability to communicate effectively, contribute to a team and function in an unfamiliar and changing environment. Student grades were assigned using the following: attendance at pre and post departure classes, active participation on-campus and abroad, a semester reflective journal, pre-departure presentation, final project and contribution to blog entries while abroad (http://www.canr.msu.edu/undergraduate/study_abroad_in_canr/canr_study_abroad_students/). The detailed point distribution for these assignments is outlined in Table 2.

For the final project, students worked with extension educators to select an agricultural area of importance identified while traveling in Vietnam. Students prepared a written proposal, outline, paper and a twenty minute presentation on their selected topic. Topics included: exploration of the Duroc/Pietran cross boar, the growing export industry of aquaculture, implementation of anaerobic digesters and improved utilization of rice straw in ruminant diets. Students were asked to prepare the paper in a popular press format, with the anticipation that they would work with the extension educators and faculty to submit articles for publication in extension bulletins or trade journals.

Intercultural Development Inventory

The impact of this program on the development of the participants' intercultural competence was also assessed using the Intercultural Development Inventory (IDI) (Hammer and Bennett, 1998). The use of IDI and experimental design were approved by the Michigan State University Institutional Review Board. Intercultural

Table 2. Point distribution and grading scale for undergraduate students enrolled in ANS 480 (Animal Systems in International Development)

Point Distribution	Points	Assigned Course Grade ^b
Predeparture meetings	75	4.0
Predeparture presentation	25	3.5
Active participation	50	3.0
Reflective journal	25	2.5
Blog contributions	25	2.0
Final Project	75	1.0
Total Points	275	0.0

Grading Scale ^a	Assigned Course Grade ^b
93 and up	4.0
88 to 92	3.5
80 to 87	3.0
73 to 79	2.5
66 to 72	2.0
55 to 65	1.0
54 or lower	0.0

^aGrading scale as a percentage or points earned out of the possible total points

^bCourse grade reported on a scale of 0.0 to 4.0

Competence, as measured by the IDI, is the capability to shift cultural perspective and adapt behavior to cultural commonality and difference. The IDI is both a quantitative and qualitative assessment tool, with 50 items, expanded demographic questions and a set of four contextual (qualitative) questions. The nine program participants completed the initial IDI 6 weeks prior to departure to Vietnam and then again 3 weeks after their return to the United States. The survey was located online and could be voluntarily accessed once by a unique email link sent to each participant. Participants were asked to answer all 50 items. Table 3 describes the demographics of the group. A group report, as well as individual reports, was generated upon completion of each IDI. Participants had access to the IDI Group Profile Reports, which were summarized in two 45 minute debriefing sessions with an IDI Qualified Administrator. Individual report information was kept confidential between the facilitator and the participant.

Prior to departure, the group met to identify goals and challenges related to the program (Table 4). The primary goals expressed by both students and educators were academic and professional in nature. The group sought a better understanding of the future role of agriculture in Vietnam and how this fit on a global level. Several were particularly interested in gaining a better understanding of Asian culture. The majority of the challenges centered around cross-cultural and intercultural concerns. Participants were concerned how they would navigate the language barrier, understand cultural norms, deal with different food and respect the lifestyle of the Vietnamese. Participants were also aware of the diversity within their cohort of travelers. There was some concern that individual interests would not be accommodated in such a diverse group.

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Table 3. Demographic characteristics of 9 program participants completing the Intercultural Development Inventory

Demographic Category ¹	Percentage of Respondents (%)
Gender,	
Female	75
Male	25
Age	
18-21	44
41-50	11
51-60	33
Education Level (completed)	
Secondary (high) school graduate	33
Post secondary (university) graduate	11
M.S. degree or equivalent graduate degree	33
Ph.D. degree or equivalent graduate degree	11
Total Time Lived in Another Country	
Never lived in another country	78
Less than 3 months	11
Over 10 years	11
Regions of the World Visited	
Africa	11
Western Europe	11
No travel outside of the U.S.	11
Travel to multiple regions outside of U.S.	67

¹Each category represents responses from all 9 program participants.

Table 4. Participant Identified Goals and Challenges Related to the Program¹

Goals
Cross-Cultural/Intercultural
Better understand Asian culture
Academic
Study agriculture in Vietnam and how it is difference from agriculture in Michigan
Study how climate change is impacting agriculture and affecting crop production
Learn the impact of modern technology on farm decision making
Understand impact that large companies have on agriculture in Vietnam
Understand new and emerging agricultural practices in a developing country
Professional
Further collaborate with the university
Find ways to promote cultural and technical exchanges between U.S. and Vietnam
Challenges
Cross-Cultural/Intercultural
Navigate the language barrier
Dealing with different types of food
Understanding norms and how not to offend someone
Understanding traditions
Being respectful of lifestyle, food, and religion
Personal
Accommodating the interests of all group members
Processing the trip upon return to U.S. and applying information learned in the future

¹Goals and challenges represent responses from all 9 program participants.

The IDI Development Continuum assesses intercultural competence based on the Developmental Model of Intercultural Sensitivity (DMIS) of Bennett (1986 and 1993). Paige and colleagues (2003) reported that the IDI was a sound tool to measure intercultural sensitivity. The continuum consists of five categories (denial, polarization, minimization, acceptance and adaptation), demonstrating a movement from a monocultural to an intercultural or global mindset. Groups with monocultural mindsets tend to utilize their own cultural values

and practices when identifying commonalities and differences between groups. They tend to miss, judge or de-emphasize difference. Those with an intercultural mindset use their own cultural values and practices as well as others when determining cultural difference between groups. They tend to deeply comprehend and to form bridges across difference. Denial is an orientation that may recognize observable cultural differences but does not notice deeper cultural issues, such as value systems and conflict resolution styles. People in this orientation may try to avoid or withdraw from cultural difference. Polarization indicates an orientation that interprets cultural differences and commonality in a judgmental us versus them way. People with a minimization orientation highlight cultural commonality and emphasize universal values. In the next state, acceptance, people tend to recognize and appreciate cultural differences and commonality. Finally, people in the adaptation orientation are able to shift cultural perspective and change their behavior in ways that are culturally appropriate. The Group Profile Report, generated after both the pre and post administration of the IDI, allowed the group to engage in deep discussion regarding how they, as a group, collectively experience cultural differences and therefore how they might address challenges and situations in a foreign culture.

Results of IDI

Each of the IDI Group Profiles contained information on the perceived orientation (PO), a reflection on where the group as a whole places itself along the intercultural development continuum and the developmental orientation (DO), the group's primary orientation as assessed by the IDI. Prior to departure, the group's PO score was 117.0, which indicated acceptance. However, the DO for the group was 86.7, considered minimization. This 30.3 point difference between PO and DO is represented by the orientation gap and is considered significant if the gap is seven points or higher. The group's score indicates a substantial overestimation of its level of intercultural competence. Minimization reflects an orientation that tends to view other cultures, values and principles through their own cultural lens. This is in contrast to acceptance, which recognizes that each culture has its own differences and ways of viewing values and principles. Results of the group profile upon return to the U.S. indicated little difference between the first report, with a PO of 117.2 and DO of 86.5. There are several potential explanations for this lack of orientation change. One may be due to the length of the program. The program was relatively short and although intensive, still allowed for only eight days in Vietnam. Another explanation may be the timing of the second IDI admin-

istration. Three weeks after return to the U.S. may not be enough time for program participants to reflect on their experiences abroad.

Next, the range of development orientations was evaluated for the group. This range is important because it suggests how the group will respond when confronted with various situations during the program. A narrow range suggests a more consistent perspective amongst group members and a wider range indicates a lack of consensus on how the group responds to perceived cultural challenges. Prior to departure, the group displayed orientations ranging from denial to acceptance with 44% representing minimization and 22% polarization (Figure 1A). Upon return to the U.S., the group narrowed these orientations and ranged from cusp of acceptance to the cusp of polarization (Figure 1B). Thirty-three percent of the group was identified as minimization orientation, while 44% of the group was polarization. Potential reasons for the narrowing of the orientations may be due to the fact that the group had a common experience and this may have impacted how individuals answered the IDI. Furthermore, the 9 group members were very diverse in age, educational level and interests. This narrowing may also represent the need for the group to determine ways to work together.

Summary

As society becomes increasingly global it becomes imperative for graduating students, extension educators and faculty to have an appreciation for the global issues facing agriculture. Gaining a better understanding of the challenges faced elsewhere in the world will allow for an improved ability to consider agriculture in the U.S. with international perspective. The eight day study abroad program described in this paper served as a first step in exposing students, extension educators and faculty to unique problems related to agricultural expansion in Vietnam. Although the overall program, as indicated by the IDI, did not alter the group's intercultural competence, it did show an increased ability of the group to respond to cultural challenges in a consistent manner.

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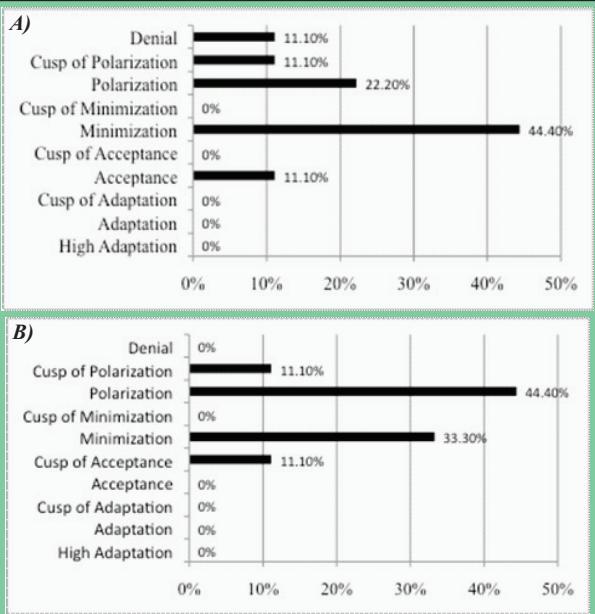
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Figure 1. Range of Developmental Orientations for both A) Pre-Travel and B) Post-Travel based on the Intercultural Development Inventory for 9 program participants.



International Infectious Disease Management: A Case Study of Internationalizing Curricula¹

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Abstract

Global perspectives in agriculture are critical to the safety of food and agricultural resources, trade and consumers globally, yet very few opportunities exist for their study. North Dakota State University and Makerere University in Uganda responded to this need by developing a joint Master of Science and Graduate Certificate in International Infectious Disease Management and Biosecurity in 2011. The program requires completion of 30 credits with core courses offered jointly by both institutions. The program is innovative, learner-centered, with student engagement, empowerment and responsibility. There is interdisciplinary learning, problem-based learning and service learning, with cross pollination of teaching methods from both institutions. Graduates of this program will have a better understanding of international agricultural, animal health and biosecurity issues, making them much more viable in today's competitive job market. This unique program within the US and African educational systems is the first US-Africa trans-Atlantic degree addressing integrated disease management and international biosecurity. The following components of the aforementioned program will be discussed: program development; overview of the program; successes; challenges faced; opportunities; and recommendations for the way forward in internationalizing curriculum on two campuses across continents.

Introduction

An increasing interdependence among the nations of the world poses important challenges for today's scientists and policymakers. Food security, transboundary pandemics and bioterrorism are just a few of the global problems that face all nations, yet globalization of research and education has failed to keep pace with these challenges. An international solution is required for this global need. North Dakota State University (NDSU) Department of Veterinary and Microbiological Sciences in partnership with the Faculty of Veterinary Medicine at Makerere University (Mak), Kampala, Uganda developed collaboration to enhance the international content of college curricula and promote globalization of research and education with the intent of providing a globally engaged workforce of scientists. As a first step in this collaboration, NDSU and Mak developed a summer abroad course in 2007, International Animal Production, Disease Surveillance and Public Health. The summer course involves international travel to Uganda for four weeks of experiential learning on topics related to tropical animal production systems; animal health; national control of zoonoses and epidemics/epizootics; biosurveillance and biosecurity; public health practice; and food safety in the tropics in contrast to the US (Ekiri et al., 2013). As a direct result of the success of this initial interaction, NDSU and Mak were awarded a United States Department of Agriculture (USDA) Higher

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Education Challenge grant in 2008-2011 to develop a joint Master of Science (MS) degree in International Infectious Disease Management and Biosecurity.

The MS program is designed for students from any university in the US, Africa or other parts of the world who hold a bachelor's or professional degree with a background in biological, health and related sciences. Persons who do not currently have a background in biological sciences would be eligible for the program after completion of appropriate pre-requisite course work. Students from the US enrolled in the MS program are required to spend time in Uganda to complete the core course, International Animal Production, Disease Surveillance and Public Health. United States and Ugandan students are required to complete at least two practicum credits (one semester) at the partner institution. The strength of the program draws upon faculty at Makerere and research opportunities in Uganda, which complement faculty expertise and research resources at either University. The ongoing collaborative scholarly activities are instrumental in building a foundation for a true partnership.

Need for a Graduate Program in International Infectious Disease Management and Biosecurity

Zoonotic pathogens account for 60% of all known human diseases and 75% of emerging diseases (King, L.J., personal communication). In addition, the World Health Organization (WHO) asserts that 80% of pathogens with potential as biological weapons are of animal origin. The impact of zoonotic diseases on human health can be found on the front page of any newspaper in the U.S. as the popular media alert the public to the current status of H1N1 (Swine Flu) and continued concern that the highly pathogenic avian influenza virus (H5N1) and avian influenza A (H7N9) may spread to humans (Webster et al., 2006; Parry, 2007; Chen et al. 2013; WHO, 2013). The emergence of novel and dangerous zoonotic pathogens is inevitable and the timing and location of their emergence cannot be predicted with any degree of certainty. Protecting the world from transboundary health threats demands a global public health perspective and investment in global public health infrastructure (Domenech et al., 2006).

One way to confront these threats is to amend scientific training curricula to prepare a globally engaged science workforce that can respond to new demands and new roles for these unforeseen challenges. Preparation facilitates successful outcomes in uncertain situations by allowing trained personnel adequate lead time to respond appropriately. In envisioning the future of veterinary medical education, The Foresight Report

(AAVMC, 2007) stated that fundamental changes in the education of veterinarians are required in order to create a system or process that is responsive to future needs. The theme of the 2007 World Health Report was "Global Public Health Security" with the WHO emphasizing the need for collaboration among nations to increase the collective capacity to respond to potential international health emergencies and other public health risks (WHO, 2007). Through its "One World, One Health" initiative, WHO as well as the Food and Agriculture Organization of the United Nations (FAO), US Centers for Disease Control and Prevention (CDC), USDA and the National Wildlife Health Center reinforce the need for an interdisciplinary, international approach to fighting zoonotic diseases (One World One Health, 2004). At the core of the "One World, One Health" movement is the collaboration between veterinary and human health professionals with the intent to manage zoonotic disease transmission. The MS degree in International Infectious Disease Management and Biosecurity (IDM) seeks to prepare students for future careers in multidisciplinary partnerships with organizations such as the CDC, WHO, USDA, the Food and Drug Administration (FDA) and the Africa Field Epidemiology Network (AFENET).

Master's Degree Program Development

Prior to the beginning of the MS degree in International Infectious Disease Management and Biosecurity (MS-IDM), students from various academic backgrounds expressed interest in the program. Data from a straw poll survey of NDSU students (http://www.surveymonkey.com/s.aspx?sm=yGChX3nGpi9hi9_2f_2bM4nXeg_3d_3d) from the following majors (Microbiology, Pharmacy, Zoology, Animal Sciences, Food Safety and Other) showed a strong student interest in this program once it was approved. Of the 117 students surveyed 64 (55%), 32 (27%) and 21 (18%) said Yes, No, or I do not know, respectively, to the question as to whether they were interested in this program if it were approved. The "Other" category of majors was comprised of Health Education, Equine Studies (Pre-Vet), Equine Science, Double major of Zoology and Microbiology and Cereal Science. Results of this straw poll can be viewed at: (http://www.surveymonkey.com/sr.aspx?sm=s600pvXW24WrVe0Z2P8mOk8XMDobcwMsS2av9LjdoQ0_3d).

In 2008-2011, North Dakota State University (NDSU) and Makerere University (Mak), Kampala, Uganda were awarded \$142,000 from the USDA Higher Education Challenge grant to develop a joint Master of Science Degree curriculum in International Infectious Disease Management and Biosecurity" (MS-IDM) and a Graduate Certificate (GC) and Undergraduate Certifi-

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cate (UGC) in International Infectious Disease Management and Biosecurity (IDM). The IDM program was developed in response to solving the problem of management of infectious diseases particularly trans-boundary animal diseases and zoonoses in the East and Central Africa (ECA) region and globally. This Masters' degree program is unique, implementing the "One World, One Health" concept and offering an international and cross-disciplinary perspective. The program builds on significant accomplishments and partnership activities between these institutions in education and research, including a successful study abroad experience, joint symposia and faculty and administrative staff exchange. The program supports institutional goals in global education and student exchange and recruitment in both institutions.

Overview of MS-IDM Program

MS-IDM Program Goals

As part of the MS-IDM training, graduate students from the US are required to spend time in Uganda to complete the core course, International Animal Production, Disease Surveillance and Public Health. Ugandan students are required to complete the above core course in Uganda and at least two practicum credits (at least one semester) at a US partner institution. US and African graduates from the MS-IDM program will directly impact the world by contributing to its protection from emerging and re-emerging infectious diseases. The program format empowers students to make significant contributions in the area of infectious disease management. In addition, the program stimulates collaborative research in trans-boundary animal diseases and zoonoses of regional and global importance among partner US and Africa institutions. Students in this program are provided a rare opportunity for truly international research, educational and cultural experiences. Through these experiences students are able to embrace diversity, challenge dogma and shape the future of infectious disease management. IDM graduates are prepared for careers in international agencies, government, regional or state health departments; all of which contribute to the health of the US, East and Central Africa region and global society as a whole.

MS-IDM Program Competencies

The MS-IDM is a 24-month (5-6 semesters) program that includes at least one summer semester in Uganda when the experiential learning portion of the course is offered. At least one semester must be completed at each university (NDSU and Mak). One additional semester may be added for organized internship. Courses are offered at each university and some courses (including core and elective courses) are offered in distance education format, while others are taught in the

traditional face to face format. A dual degree is awarded; US students receive an MS degree from NDSU while Ugandan students receive an MS degree from Makerere University.

The MS-IDM program has five core competences, each with detailed teaching objectives. The core competences are: (1) principles of international animal production and disease surveillance systems; (2) international health policy and regulations and fundamentals of international trade and microbiological risk analysis; (3) concepts of pathogenesis, prevention and control of disease, as well as integrated health/one medicine which is an innovative concept in the management of infectious disease; (4) tenets of epidemiology, research methods and disease outbreak investigation; and (5) social and cultural perspectives on health. These concepts are necessary for the student to attain mastery in international infectious disease management and biosecurity. The MS-IDM program has five core courses totaling 13 credits. Each of these core courses is supported by a number of electives offered at NDSU and Mak (Table 1). Below is an overview of the five core course goals and expected outcomes.

International Animal Production, Disease Surveillance and Public Health (experiential learning course). This course is the cornerstone for the MS-IDM degree and GC-IDM program. In 2007, North Dakota State University and Makerere University in Kampala Uganda jointly developed the course MICR 379/793 International Animal Production, Disease Surveillance and Public Health, a summer course taught in Uganda (<http://www.ndsu.edu/vetandmicro/students/current/undergraduate/study-abroad-in-uganda/>; http://www.ndsu.edu/dce/classes/study_tours/eperience_uganda_study_tour).

The course puts into context the concepts taught in the other four core courses. Students are directly exposed to African perspectives of animal production and health, public health and food safety and also learn how US systems operate (in comparison to Uganda). Students are expected to draw on experiences and provide practical examples to discuss topics related to the management of transboundary infectious diseases. This course provides for career development opportunities and fosters an international perspective of important issues related to animal production, wildlife, food safety and public health systems. The summer course is held each year during the months of June and July for a period of four weeks. The total cost of the summer abroad course is approximately \$7,000 per student (including program fees, airfare, NDSU tuition, accommodation and meals). Most students use personal funds or loans to meet course costs. Students often conduct fund raising activities to

Table 1. Core and supporting elective courses for the MS degree in International Infectious Disease Management and Biosecurity

Core	Elective	Credits	Institution
MICR 723: International Animal Production, Disease Surveillance and Public Health (Cornerstone course)		3	NDSU, MAK
	SAFE 601*: Food Safety Information and Flow of Food	1	NDSU
	SAFE 602*: Foodborne Hazards	1	NDSU
	SAFE 604*: Epidemiology of Food Borne Illness	1	NDSU
	TAD 7102: Livestock Production Systems and Disease Ecology	3	MAK
	TAD 7104: Surveillance and Risk-based Surveillance	3	MAK
	MPH 7105*: Health Policy and Primary Health Care	1	MAK
MICR 674: Epidemiology		3	NDSU
	MICR 750: Advanced Topics in Epidemiology	3	NDSU
	MICR 724: Applied Epidemiology and Biostatistics	3	NDSU
	TAD 7101: Epidemiology, Applied Biostatistics and Research Methods	3	MAK
	MPH 7102*: Applied Epidemiology 1	1	MAK
	MPH 8201*: Applied Epidemiology 11	1	MAK
TAD 7208: Prevention and Control of Transboundary Animal Diseases		3	MAK
	MICR 660: Pathogenic Microbiology	3	NDSU
	MICR 782: Molecular Microbiological Techniques	3	NDSU
	TAD 7312: Wildlife, Aquatic and Ecosystem Health Management	2	MAK
MICR 722: International Health Systems, Policy and Biosecurity		2	NDSU, MAK
	SAFE 603*: Food Safety Risk Assessment	1	NDSU
	SAFE 606*: Food Safety Crisis Communication	1	NDSU
	SAFE 607*: Food Safety Risk Management	1	NDSU
	VPM 7212: Information Systems in Animal Health and Production	2	MAK
	TAD 7211: Animal Food Value Chains and Food Safety	2	MAK
	TAD 7207: Livestock and Livestock Products Trade and Regulations	2	MAK
MPH 7204: Social and Behavioral Determinants of Health		2	MAK
	BIOC 720: Scientific Integrity	1	NDSU
	MPH 8106*: Health Ethics and Law	1	MAK
	DDC7105: Living in a Globalized World	1	MAK
	SOC7209: Sociology of Health	3	MAK

NDSU = North Dakota State University, MAK = Makerere University, MICR = Microbiology, TAD = Transboundary Animal Diseases, SAFE = Food Safety Risk Assessment, MPH = Masters of Public Health, BIOC = Scientific Integrity, DDC = Globalization, and SOC = Sociology.

* Course offered in a distance education format.

help offset program costs. In the past, NDSU provided scholarships (\$1,000 to \$5,000 per student) to NDSU students through the NDSU Development Foundation and grant funding from the US Department of Agriculture and the US Agency for International Development (USAID). Past students from other US institutions received up to \$5,000 in grant funds from their institutions to offset program costs. The summer abroad course in Uganda was described in detail by Ekiri et al (2013).

International Health Syst-ems, Policy and Biosecurity. This course provides students with the necessary information to understand local, national and inter-

national health regulations and the potential implications on animal health, human health, global trade and food safety and security. Students are expected to be able to identify international health policy regulations and understand how policy is formulated and how and where regulations are enforced. Also, students are expected to understand the principles of microbiological risk analysis, biosafety, biocontainment and biosecurity. The International Health Systems, Policy and Biosecurity course includes two separate weeks of travel to Washington DC; one week to attend the National Animal Health Policy and Food Security course and another week to attend the Global Health Policy course. During the national course, students visit national agencies including: The American Veterinary Medical Association (AVMA), The Environmental Protection Agency (EPA), The US Department of Agriculture (USDA), The US Government Accountability Office (USGAO), The National Academies of Sciences, The US Congress (The Senate and The House of Representatives), The American Farm Bureau, Food Research and Action Center and The Star Tribune (McClatchy group Newspaper Company).

The National course integrates science, beliefs and policy around a thematic topic that is selected each year. The Global course covers the role of Intergovernmental organizations in Global Health and International Trade. Students engage with intergovernmental agencies involved in animal health, food security and public health such as World Organization for Animal Health (OIE), Food and Agriculture Organization of the United Nations (FAO), The World Health Organization (WHO) and World Trade Organization (WTO), The World Bank and International Food Policy Research Institute (IFPRI). The National Animal Health Policy and Food Security and Global Health Policy courses are team taught by Washington State University (WSU), University of Minnesota and NDSU, with WSU

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as the lead institution. Prior to the two short courses, students from NDSU and Makerere complete two didactic credits at NDSU during the spring semester. The total cost of the two short courses is approximately \$3,300 per student or \$1,650 per student for each one week course. This cost includes airfare, lodging, meals and incidentals. Most students use personal funds and scholarships to meet course costs. In the past, NDSU has provided scholarships to students through the NDSU foundation and grant funding from USAID to offset costs.

Prevention and Control of Transboundary Animal Diseases. This course focuses on the pathogenesis, prevention and control of zoonoses. The management of global zoonotic diseases requires collaboration of physicians, veterinarians and other scientific health related disciplines. Students are expected to understand how microorganisms cause disease and be able to describe strategies for prevention and control. Students are also expected to understand the concept of one-medicine, how one-medicine can be applied to the study of zoonotic diseases and potential pitfalls to collaborating across disciplines. The course is offered in a traditional classroom format.

Epidemiology. This course provides students with an understanding of epidemiologic principles needed to detect, describe and implement disease control measures and provide recommendations for control and prevention of transboundary epidemics. Students are expected to be able to apply epidemiology principles to the investigation of infectious disease outbreaks. The course is offered in both traditional classroom and distance education formats.

Social and Behavioral Determinants of Health. Different social factors particularly cultures play a significant role in students' perceptions in learning. An awareness of these differences is essential to the management of infectious disease on an international scale. Students are expected to be aware of the different social and cultural perspectives on health. The course is offered in a traditional classroom format. A summary of the five core and elective courses, credits and institution offering each course is presented in Table 1.

MS-IDM Degree Requirements and Examinations

Students in the MS-IDM program can emphasize coursework, research and laboratory or field experience. Two plans are available to provide students flexibility in pursuing different options: Plan A and Plan B formats. Both Plan A and Plan B formats require a minimum of 30 graduate credits, which include thirteen credits of core courses, four credits of practicum and one credit of graduate seminar (Table 2). Plan A includes at least 24 months of full-time study, completing a minimum of 30 graduate credits: at least 16 didactic credits made up of 13 credits of core courses and 3-4 credits of elective courses (agreed upon by the student's advisory committee); 4 credits of practicum evaluated by advisory committee; 1 credit of seminar; and 6-10 credits of research. Overall GPA of 3.0 or higher, a research-based thesis and a final oral defense are required. Plan B includes at least 24 months full-time study, completing a minimum of 30 graduate credits: at least 16 didactic credits (made up of 13 credits of core courses and 8-10 credits of elective courses); 4 credits of practicum; 2-4 credits of creative activity; and 1 credit of seminar. Overall GPA of 3.0 or higher and a final oral defense of creative activity or project are required.

The practicum is a learning opportunity that is not available on the home continent. The topic(s) is (are) related to an aspect of disease management, disease surveillance and eradication, animal husbandry, public health, or regulatory affairs. At NDSU, the practicum can be developed around 1) the NDSU veterinary diagnostic lab, 2) a typical feedlot, 3) the Dickinson Research and

Table 2. Details of Plan A (Thesis) and B (Non-Thesis) Format for the MS degree in International Infectious Disease Management and Biosecurity

Detail	Plan A (Thesis)	Plan B (Non-thesis)
Duration of full-time study	24 months	24 months
Minimum number of graduate credits	30 credits	30 credits
Didactic courses	At least 16 credits made up of <ul style="list-style-type: none">▪ 13 credits of Core Courses▪ 3-4 credits of elective courses (agreed upon by the student's advisory committee)	At least 16 credits made up of <ul style="list-style-type: none">▪ 13 credits of Core Courses▪ 8-10 credits of elective courses (agreed upon by the student's advisory committee)
Practicum	4 credits (evaluated by advisory committee)	4 credits (evaluated by advisory committee)
Creative activity		2-4 credits
Seminar	1 credit	1 credit
Research	6-10 credits	
Overall GPA	3.0 or higher	3.0 or higher
	A research-based thesis and a final oral defense	A final oral defense of creative activity or project
Time outline		
Semester 1	2 credits research 6 credits didactic courses	6 credits didactic courses
Semester 2	2 credits research 6 credits didactic courses	2 credits creative activity or project 6 credits didactic courses
Semester 3	2 credits research 6 credits didactic courses	2 credits creative activity or project 6 credits didactic courses
Semester 4	1 credit seminar 2 credits research 4 credits practicum*	1 credit seminar 3 credits didactic courses 4 credits practicum

*The students will spend at least one semester abroad and can schedule all the 4 credits of the practicum in one semester or can spread them out and schedule them in more than one semester if they chose to spend more than one semester abroad.

Extension center, 4) The Centers for Disease Control and Prevention, or 5) the North Dakota Department of Health. At Mak, practicum credits could be developed around 1) National Park activities, 2) Public Health, 3) AFENET projects, 4) Ministry of Agriculture, Animal Industry and Fisheries projects, or 5) field or producer visits. A third alternative for the practicum could be developed around a field experience in partnership with organizations such as OIE, FAO, WHO, USDA-APHIS and CDC. Placement of students is based on student interests matched with interests of faculty and availability of advisors at participating institutions.

The creative activity includes a single project or series of projects. For greater flexibility, each university assigns a faculty advisor/mentor to each student. The advisor/mentor chairs the advisory committee and ensures student progress and the student is free to explore projects in multiple laboratories. Each candidate assembles an advisory committee and must pass a final oral examination. Following a successful defense, the candidate compiles a comprehensive written report of the creative activity that is evaluated by the advisory committee. The precise nature of the individual creative activity is defined by the student working together with the advisory committee. Examples of possible creative components include a comprehensive paper, a portfolio, an integrated field experience such as a report of a specific disease outbreak investigation, or case studies of transboundary and zoonotic diseases in known hot spot areas.

For graduate students that choose to pursue a creative activity in health systems policy and regulation, their practicum may be done at an international disease control agencies like OIE, FAO, WHO or federal agencies like the CDC and USDA under mentorship of a previously identified expert.

Management and Funding of the MS-IDM Program

Administration of the program is primarily handled through the Department of Veterinary and Microbiological Sciences by the Program Director who reports to the Head of Department, who in turn reports to the Dean of Graduate and Interdisciplinary Studies and the Dean of College of Agriculture, Food Systems and Natural Resources at NDSU. Each student has a graduate/advisory committee. One advisor/mentor is assigned from each university and the chair of the advisory committee of a student is the advisor from the home institution where the student is initially registered. At least two additional committee members (agreed upon by the student and major advisor) from either institution are added to the advisory committee. The committee

also includes a Graduate School Representative from NDSU. Thesis or creative components are in English and conform to both graduate schools' regulations. Current regulations/policies at both universities align well. The oral defense can occur at either university.

Students pay an agreed upon tuition rate at each university while taking respective courses. The MS-IDM program is operated using a "study abroad" program model. Students who elect to study at NDSU or Mak for one or two semesters pay regular tuition to home institution (where the student is registered for the program) and transfer credits for the courses taken at the other institution. Courses taken for this program from Mak under the study abroad model are not considered transfer credits and can be included on programs of study without petition. The policy limits transfer of credits to a maximum of 12 semester hours of graduate credit. Spending at least one semester at a foreign institution is a requirement of this program. We anticipate that most students entering this program will have their travel costs covered. In cases where travel funding is not available, students are informed before they are admitted into the program. In the past, NDSU and Mak have provided funding to enrolled students at the respective institutions. Three US students and ten Ugandan students were provided scholarships (tuition and stipend) through grant funding from USDA and USAID.

Graduate Certificate in International Infectious Disease Management

Students have an option of completing the Graduate Certificate in International Infectious Disease Management (GC-IDM) instead of the master's degree. Students who opt for the GC-IDM earn it upon completion of the five core courses totaling 13 credits (Table 1). The theoretical course materials of MICR 723 (International Animal Production, Disease Surveillance and Public Health) are offered in Distance Continuing Education (DCE) format while the experiential learning component of the course is offered in the field in Uganda. Students apply for the GC-IDM by following an application process approved by the Program Director, the Head of Department of Veterinary Microbiological Sciences and the Dean of Graduate and Interdisciplinary Studies at NDSU. At Makerere University, the application process for the GC-IDM is approved by the Program Director, the Dean of the Faculty of Veterinary Medicine and the Director of the School of Graduate Studies.

Successes

The master's degree program in infectious disease management and biosecurity contributes to preparing students for careers in animal production,

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international agencies, government, regional or state health departments; all of which contribute to the health of animals and humans in the United States, East and Central Africa region and global society as a whole. Students in this program benefit from the rare opportunity for truly international research, educational and cultural experiences. From 2011 to date, a total of 14 students have enrolled in the program; ten students from Uganda, three from the US and one from Ethiopia. The MS-IDM program has graduated six students with eight more students projected to graduate by December 2013. The six MS-IDM graduates have been admitted to Medical School (2), or Ph. D programs (2), or have been employed by US State Department of Health (1) and Mak (1). Students have won scholarships from competitive programs such as EcoHealthNet (ecohealthnet@ecohealthalliance.org) for short-term training. Also, students have benefitted from problem-based learning with a service learning component. In June 2012, the first cohort of eight MS-IDM students participated in a community service project in Arizona coordinated by the US Centers for Disease Control and Prevention (CDC) to control Rocky Mountain spotted fever (a tick-borne disease of humans caused by the bacterium *Rickettsia rickettsiae*). In 2012, the second cohort of six MS-IDM students participated in a community service learning project in Uganda which involved vaccination of dogs against rabies and education of the local community about the need for rabies vaccination (rabies is a deadly viral disease that can be transmitted from animals to humans through the bite of a rabid animal).

The summer abroad course contributes to producing a broadly inclusive, open minded, world class and globally engaged science work force. Studying international animal production, food safety and public health systems in a different country provides a foundation for tomorrow's global citizens and exposes students to a foreign culture which allows them to challenge dogma. Since 2007 when this course was started, data shows that students are interested in participating in the course; every year students have taken the course. From 2007 through 2012, a total of 86 students from NDSU (33/86 students, 38%) and other higher education institutions in US (24/86, 28%) and East Africa (29/86, 34%) have taken the course. Student majors at NDSU (33 students) have included Microbiology (8 students), International Infectious Disease Management (8), Food Safety/Communication (7), Animal Science (4), Zoology (3), Pre-Vet Medicine (2) and Microbiology/Biotechnology (1). Majors from East Africa have included International Infectious Disease Management (11), Public Health (1), Nursing (1) and working professionals: Veterinarians (6), Mak faculty (6), Public Health (3) and Physician (1).

Challenges Faced

A potential limitation of the master's program is sustainability. All prospective students are informed of the financial requirements of the program when they express interest. For example, they are informed that the summer abroad course in Uganda is expected and an integral part of the masters' program. Students who enroll into the masters' program are therefore expected to pay for this international learning experience. Although many students express interest in the experiential learning portion of the MS-IDM program (summer abroad course), several are limited by cost. The total cost of the summer abroad course is approximately \$7000 per student (including program fees, airfare, NDSU tuition, accommodation and meals). In the past years, the university has provided scholarships to students in amounts of \$1,000-2,500 per student to offset costs. Most students have to use personal funds to meet course costs. A second limitation is fear of distant travel away from home to an unknown country. Some students have never travelled abroad alone and are afraid. The fear may be exacerbated by negative political events in certain regions of the world that may be geographically located close to the destination country, raising security concerns for both parents and students. Other challenges experienced so far include differences in policies at the two institutions, administrative challenges related to joint admission of students, tuition payment and transfer of credits between the two institutions, registration and records keeping and effective communication between the institutions.

As a result of these challenges, a truly joint degree with one certificate offered by both institutions has not yet been achieved. The program is currently being administered as a dual degree with each institution offering its own degree; US students receive an MS degree from NDSU while Ugandan students receive an MS degree from Makerere University. Unlike a joint degree, with a dual degree, each institution offers its own degree and has control over the curriculum and administration of the degree. Students in a dual degree can enroll at one of the participating institutions and receive only one degree from that institution or can choose to get both degrees by fulfilling the requirements at both institutions. Student exchange and transfer of credits still occurs between participating institutions and students pay tuition at the primary institution where they enrolled. Overall, a dual degree allows each institution more flexibility with management of its curriculum.

Opportunities

In spite of the challenges experienced, the benefits of the program have been substantial including testimonies

of personal benefits experienced as a result of the program. The career advancement of the students in the program has been realized as mentioned previously. There are plans to offer the MS-IDM program to all higher education institutions in East Africa and obtain funding from governments of East African countries under the regional grouping of the Intergovernmental Authority on Development (IGAD), an eight-country regional development organization in East Africa. One of the objectives of IGAD is to facilitate, promote and strengthen cooperation in research development and application in science and technology (IGAD, 2013).

Future Direction and Recommendations

In an effort to address the challenges of the MS-IDM program at the institutional level, several plans are being explored. The MS-IDM program administration plans to propose to the North Dakota State Board of Higher Education to modify the current joint MS-IDM program to a dual degree, citing differences in policies at the two institutions. Changing the MS-IDM program from a joint to a dual degree would address most of the current institutional challenges. In a dual degree program, the following elements would be acceptable: (1) each institution would offer its own degree and have control over the curriculum and administration of the degree; (2) students would enroll in one of the programs and get only one degree from that institution or could choose to get both degrees by fulfilling the requirements at both institutions; (3) student exchange and transfer of credits would still occur between the institutions and for MS-IDM program, students could be allowed to transfer up to 12 credits from the other institution; (4) students would pay tuition at the institution where they enroll and in the case of MAK students, they could pay residence fees in order to reduce on the burden of tuition; and (5) a detailed Memorandum of Agreement would be drafted to address issues such as tuition waiver and credit transfer between institutions.

A number of plans are proposed to address issues related to program sustainability. First, the study abroad in Uganda core course which is quite costly could be substitutable with another international course on infectious disease management offered by NDSU in another country or offered by other higher education institutions. Second, the MS-IDM program could be opened up to other higher education institutions, allowing students from those institutions to pay residence tuition. Third, team-teaching of additional courses with partner institutions could be explored, for example currently team taught courses include International Animal Production, Disease Surveillance and Public Health (NDSU and

Mak) and International Health Systems, Policy and Biosecurity (Washington State University, University of Minnesota and NDSU). Fourth, more courses could be converted into distance education format (except the experiential learning experience completed abroad/in another country) to allow completion of the degree online which would attract a wider audience of students worldwide and generate revenue to manage the program. The long-term goal of the MS-IDM program is to offer most courses in distance education format. Finally, sharing of resources (team-teach courses) with other existing graduate programs at NDSU such as Masters of Public Health would reduce program costs.

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Change in Students' Self-reported Learning Gains and Worldviews in a Discussion-Driven International Livestock Agriculture Classroom^{1,2}

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Abstract

This article outlined the design of a small-enrollment, non-lecture course on international livestock agriculture and documented self-reported learning gains and changes in worldviews of 66 students captured with a 14-item survey administered the first and the last day of class in four consecutive years (i.e., student cohorts). Measured as change in self-reported level of knowledge, learning gains averaged 64%, but ranged from 24 to 157% across course topics. The course changed students' worldviews on food security, livestock agriculture as a means to reduce poverty in rural Mexico and the relative benefits for Mexico and the U.S. to engage in dairy trade, but not on immigration and environmental issues. At the beginning of the semester, self-reported level of knowledge varied between majors (dairy science vs. non-dairy science) and among standings (freshman, sophomore, junior or senior), but worldviews varied between majors only. By the end of the semester these relationships had subsided, but cohort had risen in influence. More than the major, the cohort shaped a student's self-reported learning gains and changes in worldviews during the semester. These outcomes may reflect the impact of an instructional design aimed at engaging students from diverse backgrounds in a discussion-driven classroom throughout the semester.

Introduction

Some educators have long insisted that learning about the world and about the interrelationship of national, international and global issues is indispensable to a high quality education (Green, 2002). Similarly, the American

Association of Colleges and Universities (AAC&U) have echoed these views. For example one of the AAC&U's principle of excellence for 21st century suggested to engage students in "Big Questions" of contemporary and enduring significance, addressed with a "*far-reaching curriculum in science and society, cultures and values, global interdependencies the changing economy and human dignity and freedom*" (AAC&U, 2013a). Intercultural knowledge and competence and engagement in local and global issues provide opportunities for gains in personal and social responsibility, which is one of the essential learning outcomes of a four-year degree (AAC&U, 2013b). In addition to training students for so-called "engaged citizenship" into their adulthood, there are pragmatic and practical economic and market-based reasons to expand the worldviews of the next generation of agriculturalists and employees of agricultural firms. With the productivity of U.S. agriculture growing faster than domestic food and fiber demand, policy makers, farmers and agricultural firms have increasingly relied on export markets to sustain prices and revenues. For example in 2012, 13.2% of US milk production was exported and international agreements such as NAFTA (North American Free Trade Agreement) has made it possible for Mexico to become the first billion dollar dairy export market from the U.S. in 2011 (USDEC, 2013).

Canadian and U.S. administrators of animal sciences-related departments indicated a strong belief in the value of internationalization initiatives, but implementation remained limited (Forsberg et al. 2003;

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Lesch and Wachenheim, 2004). In spite of practical and philosophical importance, there are many barriers to internationalizing the science curriculum (Wattiaux et al., 2001; Van Eyck et al, 2012) and educating students in international and global agriculture has remained a relatively neglected part of animal sciences curriculum (Acker and Taylor, 2000). Thus the first objective was to outline the design of a course aimed at: (a) increasing students' awareness of the multi-dimensionality and multi-functionality of livestock agriculture in a global context and (b) increasing students' critical thinking skills by exploring inter-dependencies between the U.S. and Mexico using the dairy industry as a case-study. The second objective was to determine retrospectively the influence of student's major, standing, cohort and mid-semester decision to participate in a subsequent study abroad (two-week summer field program in Mexico) on their self-reported level of knowledge and worldviews at the beginning of the semester, the end of the semester and the change in these variables as a result of participating in the course.

Materials and Methods

Course Description and Design

The course titled “Agriculture in Emerging Economies: Dairying in Mexico” has been taught for the last 10 years as a one-credit elective open to all undergraduates at the University of Wisconsin-Madison. Annual enrollment for the four years (2009 to 2012) of this study is presented in Table 1. Enrollment over the life-span of the course was 15.8 ± 4.6 (means \pm standard deviation), but was 19.2 ± 2.6 in the last four years. The course does not have a prerequisite but serves as a prerequisite for a two-week faculty-led summer field program in Central Mexico that students elect to enroll for in mid semester.

The syllabus describes the learning objectives as follows: Students who actively participate in this seminar will gain knowledge and understanding of a few important global agricultural issues, including: a) The diversity of agricultural systems around the world; b) The historical, social, economic and political forces that shape rapid changes in agriculture around both the “developed” nations and the “developing” nations; c) The increased interdependence of agricultural industries around the world; d) The people of Central Mexico, its history, economic and social structure; e) Mexico-U.S. relations regarding immigration issues, trade of dairy products and the tension between the two countries because of cultural differences and f) The diversity of the Mexican dairy industry, which spans from subsistence farming (resource-poor farmers) to industrial-scale operations. An additional objective is listed as helping

Table 1. Class and Study Enrollment

Cohort/ Year	Class Enrollment Total	Total	Study Enrollment						Data Excluded ^x	
			Major ^z		Standing ^y				IC	NE
2009	23	17	4	13	1	11	1	4	1	5
2010	20	19	12	7	5	3	4	7	0	1
2011	18	14	7	7	0	1	4	9	2	2
2012	16	16	9	7	4	4	1	7	0	0
Total	77	66	32	34	10	19	10	27	3	8

^xMajor: ND = Non-Dairy Science, D = Dairy Science.

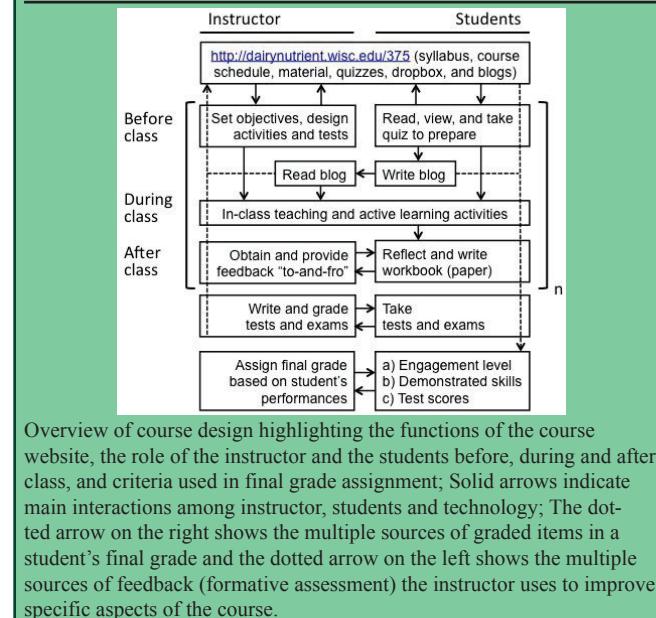
^yStanding: Fr = Freshman, So = Sophomore, Ju = Junior, and Se = Senior.

^zData excluded: IC = Incomplete data, NE = Not eligible (graduate or guest students).

students gain competence in discussing international agricultural issues. Consequently, selection of course material, website features (<https://dairynutrient.wisc.edu/375/>) and classroom activities have been designed to engage students in higher-order of thinking and to create an inclusive in-class and out-of-class learning community (Figure 1).

The first section of the course introduces big-picture topics related to population change, food demand and supply, livestock agriculture and trade at the global scale. Regional or national examples are used to illustrate global trends and interdependencies among nations. The so-called “Livestock Revolution” (Delgado and Narrod, 2002; Delgado et al., 2003) is a central theme of recurrent class discussions. The second section of the course focuses on the overall U.S. – Mexico agricultural relations with a specific emphasis on immigration and trade issues. Finally, the third part of the course focuses on a description and analysis of the Mexican dairy industry: a) from the United States’ exporting firms perspective, b) from the Mexican farmers’ perspectives and c) from the perspective of the sustainability challenges associated with specific dairy production systems in Mexico in relation to equivalent systems in the United States.

Figure 1:



Overview of course design highlighting the functions of the course website, the role of the instructor and the students before, during and after class, and criteria used in final grade assignment; Solid arrows indicate main interactions among instructor, students and technology; The dotted arrow on the right shows the multiple sources of graded items in a student's final grade and the dotted arrow on the left shows the multiple sources of feedback (formative assessment) the instructor uses to improve specific aspects of the course.

Figure 1 illustrates the multiple functions of the course website and the roles and responsibilities of the instructor and the students in the class. In essence, students demonstrate their engagement with course material prior to class meeting with on-line quizzes and blog entries. Typically, each class starts with a graded group quiz that has three pedagogical functions. It rewards students for having interacted with the pre-assigned material, it is a simple way to take attendance, but more importantly it makes students talk to one another about course content from the very beginning of class. Learning activities during the remaining time in class varies weekly, but are designed according to a template, first to bring everyone "on the same page" in regards to important facts and figures of the pre-assigned material and then to engage students in individual, small group and large group activities culminating with a whole class discussion and wrap-up. Grades for the course are assigned based on six items including: (1) students' test scores, level of engagement measured with weekly in-class quizzes (2) before-class blog entries (3) and after-class reflections entries (4) and demonstration of ability to integrate content and analyze it critically in a two-part creative story writing/telling (5; written an oral midterm) and through a final take-home exam (6).

Survey Instrument and Administration

The survey instrument used in this study comprised two parts (Table 2). The first part was developed to measure students' perceptions of their level of knowledge of core topics of the course (item 1.1 to 1.7). In the second part, students' worldviews were measured as level of agreement with items worded as broad integrative statements addressing a particular aspect of the same core topics (items 2.1 to 2.7). Possible numerical scores for each item in the scale ranged from 1 to 10, with descriptive qualifiers describing scores 1 and 2 as "Not at all," scores 3 and 4 as "A little," scores 5 and 6 as "Somewhat," scores 7 and 8 as "A lot" and scores 9 and 10 as "A great deal." The survey was administered, with the consent of every participant, as

one of the first class activities conducted on the first day of class and a second time, as one of the last activities of the last day of class. Students were requested to provide the first two letters of the first names of their mother and father as a way to anonymously match early and late semester surveys. Student demographics data collected included major, standing and (on the last day of class only) whether in mid-semester the student had decided to enroll in the subsequent study abroad program in Mexico. The analysis reported here included data collected in four consecutive years (2009 to 2012), construed thereafter as student cohorts.

Statistical Analysis

The PROC ANOVA of SAS (SAS Institute, 2008) was used to determine the significance of the difference in items scores between the first and the last day of class. The differences for items 1.1 to 1.7 and for items 2.1 to 2.7 quantified the self-reported learning gains and the change in worldviews, respectively during the semester. In a second analysis, the dependent variables of interest included: a) item scores on the first day of class, b) item scores on the last day of class and c) the difference in item scores between the last and first day of class. Our interest was to determine whether a student's major (dairy science vs. non-dairy science), standing (freshman, sophomore, junior or senior), cohort (2009, 2010, 2011, or 2012) and the mid-semester decision to enroll in study abroad (yes or no) had an ex post facto influence on the aforementioned dependent variables. Given prior experience (Wattiaux and Crump 2006), data were analyzed as ranked values using a nonparametric procedure (PROC NPAR1WAY,

Table 2. Instrument Used to Determine Students' Self-Assessment of Knowledge (items 1.1 to 1.7) and to Capture Students' Worldviews (items 2.1 to 2.7) on Course Topics

Items	Not at all	A little	Some what	A lot	A great deal
1. How much knowledge do you have on the following topics:					
1.1. Agriculture in developing countries	1	2	3	4	5
1.2. Agriculture in general in Mexico	1	2	3	4	5
1.3. U.S. – Mexico agriculture relations	1	2	3	4	5
1.4. Structure and diversity of the Mexican dairy industry	1	2	3	4	5
1.5. Structure and diversity of the U.S dairy industry	1	2	3	4	5
1.6. Mexico, its people and its cultures	1	2	3	4	5
1.7. Issues related to poverty in Mexico	1	2	3	4	5
2. To what extent do you agree with the following statements:					
2.1. The increase in world population will create a worldwide food crisis in my lifetime	1	2	3	4	5
2.2. Livestock (dairy) agriculture is more environmentally friendly in Mexico (developing countries in general) than in Wisconsin (the U.S. in general)	1	2	3	4	5
2.3. Illegal (Mexican) immigrants are taking away jobs from U.S. Citizens	1	2	3	4	5
2.4. Livestock (dairy) production should be promoted as a way to alleviate poverty and develop a strong rural economy in Mexico	1	2	3	4	5
2.5. Expanding agricultural (dairy) trade with Mexico is good for the U.S.	1	2	3	4	5
2.6. Expanding agricultural (dairy) trade with the U.S. is good for Mexico	1	2	3	4	5
2.7. The Mexican and the U.S. Dairy industry will look more alike in the next 20 years?	1	2	3	4	5

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SAS Institute, 2008) and the Kruskal-Wallis test, which do not rely on assumption of normal distribution of the data and residual errors (Conover, 1999). Means values were reported on the original scale for convenience of interpretation. Differences were considered significant for $P \leq 0.05$ and tendencies were reported in tabular results for $0.06 \leq P \leq 0.15$.

Results

Enrollment

All students enrolled in the course over the four years of the study consented to participate in the study. However, eight of the 77 students were graduate or guest students and were not eligible to be enrolled in the study. Among the 69 eligible students three were excluded from the analysis because of the inability to pair unequivocally a beginning-of-semester survey with end-of-semester survey (Table 1). Almost half of study participants were dairy science major. Non-dairy science majors included primarily Animal Sciences, Agricultural and Applied Economics and Agronomy. Students in the study were primarily seniors and sophomores followed by freshmen and juniors. This pattern may reflect in part the curricular flexibility for elective courses throughout the 4-year program. However, Table 1 showed also a highly variable pattern of majors and standing across cohorts (i.e., years) reflecting most likely the absence of prerequisite for the seminar. In addition, 29 students among the eligible study participants elected in mid-semester to attend the subsequent study abroad program.

Students' Gain in Knowledge and Change in Worldviews

The self-reported level of knowledge measured on a scale of 1 (not at all) to 10 (a great deal) and captured with survey items 1.1 to 1.7, was 4.5 ± 1.0 and 7.4 ± 0.3 (means \pm standard deviation) on the first day of class and at the last day of class, respectively. Learning gains measured by the changes in scores during the semester were significant for all seven topical areas (items 1.1 to 1.7, Table 3) and averaged 2.9 ± 1.2 overall. Thus the increase in self-reported level of knowledge averaged 64.4%, but the gains were not uniform across items. Interestingly, the two largest increases (111% and 157%) were observed for the two items that had the lowest score the first day of class (item 1.2: Agriculture in general in Mexico and item 1.4: Structure and diversity of the Mexican dairy industry). Con-

versely, the two lowest increases (24% and 31%) were observed for the two items that had the highest scores the first day of class (item 1.6: Mexico, its people and its cultures and item 1.5: Structure and diversity of the U.S. dairy industry).

The average level of agreement with the 7 items used to measure students' worldviews on course topics (items 2.1 to 2.7) was 5.4 ± 1.2 and 5.3 ± 1.7 the first and last day of class, respectively. There was no change in students' worldviews for three items, but significant changes occurred for four items (Table 3). The three items that remained unchanged were those that students scored numerically lowest the first day of class and included item 2.3 addressing illegal immigration, item 2.2 addressing the relative environmental impact of livestock and item 2.7 addressing the convergence of the Mexican and U.S. dairy industries in the future. Overall, the course decreased students' belief that the increase in world population will create a worldwide food crisis in their lifetime (item 1.1), but increased their belief that livestock (dairy) production should be promoted as a way to alleviate poverty and develop a strong rural economy in Mexico (item 2.4). Expanding agricultural trade between the U.S. and Mexico was perceived as equally good for both nations the first day of class (item 2.5 score = 6.15 and item 2.6 score = 6.54, Table 3). However, on the last day of class the belief that it was good for the U.S. to expand its trade with Mexico increased by 1.74 units (item 2.5, Table 3), but the belief that it was good for Mexico to expand its trade with the U.S. decreased by 2.30 units (item 2.6, Table 3).

Table 3. Students' Self-Reported Level of Knowledge (items 1.1 to 1.7), Worldviews (items 2.1 to 2.7) and Change (Chg.) in These Variables during the Semester Measured by Difference between Item-Scores the First Day of Class (Pre) and the Last Day of Class (Post)

Items and Statement	Pre	Post	Chg.	P ^z
1. How much knowledge do you have on the following topics:				
1.1 Agriculture in developing countries	4.28	7.40	3.09	<0.001
1.2 Agriculture in general in Mexico	3.65	7.73	4.04	<0.001
1.3 U.S. – Mexico agriculture relations	3.97	7.49	3.45	<0.001
1.4 Structure and diversity of the Mexican dairy industry	2.99	7.80	4.70	<0.001
1.5 Structure and diversity of the U.S dairy industry	5.70	7.64	1.76	<0.001
1.6 Mexico, its people and its cultures	5.55	6.87	1.33	<0.001
1.7 Issues related to poverty in Mexico	5.04	7.19	2.20	<0.001
2. To what extent do you agree with the following statements:				
2.1 The increase in world population will create a worldwide food crisis in my lifetime	5.97	4.88	-1.06	<0.001
2.2 Livestock (dairy) agriculture is more environmentally friendly in Mexico (developing countries in general) than in Wisconsin (the U.S. in general)	3.98	4.07	0.16	0.618
2.3 Illegal (Mexican) immigrants are taking away jobs from U.S. Citizens	3.35	2.96	-0.33	0.220
2.4 Livestock (dairy) production should be promoted as a way to alleviate poverty and develop a strong rural economy in Mexico	6.37	7.03	0.80	0.022
2.5 Expanding agricultural (dairy) trade with Mexico is good for the U.S.	6.15	7.91	1.74	<0.001
2.6 Expanding agricultural (dairy) trade with the U.S. is good for Mexico	6.54	4.48	-2.30	<0.001
2.7 The Mexican and the U.S. Dairy industry will look more alike in the next 20 years?	5.56	5.83	0.35	0.189

^zTwo sided t-test for the significance of Chg.

Impact of a Student's Major, Standing, Cohort and Commitment to Study Abroad

A student's mid-semester decision to participate or not in the subsequent faculty-led study abroad in Mexico for which the course is a prerequisite had no impact on scores of any items on the last day of class, the change in score during the semester, or the first day of class (data not shown). Table 4 summarized the influence of a student's major, standing and cohort on all items on the first day of class, the last day of class, as well as the learning gains (item 1.1 to 1.7) and change in worldviews (items 2.1 to 2.7) that occurred during the semester.

Student's Major. On the first day of class, scores for self-reported level of knowledge in agriculture in developing countries (item 1.1), structure and diversity of the Mexican dairy industry (item 1.4) and structure and diversity of the U.S. dairy industry (item 1.5) were higher for dairy science majors compared with non-dairy science majors (4.75 vs. 3.81, 3.56 vs. 2.42 and 6.88 vs. 4.50, respectively). However on the last day of class, only item 1.5 tended to remain higher for dairy science majors compared with non-dairy science majors (7.96

vs. 7.25). Self-reported learning gains were higher for non-dairy science majors than for dairy sciences majors for items 1.4 (structure and diversity of the Mexican dairy industry; 5.50 vs. 4.04, respectively) and items 1.5 (structure and diversity of the U.S. dairy industry 2.54 vs. 1.12, respectively) and tended to be higher also for items 1.1 and 1.2 (Table 4). Furthermore, on the first day of class dairy science and non-dairy science majors differed substantially in their worldviews as revealed by a tendency or a significant difference for six of the seven items in the instrument (item 2.1 to 2.7, Table 4). Dairy science majors scored higher for item 2.1 (the increase in world population will create a worldwide food crisis in my lifetime; 6.46 vs. 5.47), item 2.4 (Livestock (dairy) production should be promoted as a way to alleviate poverty and develop a strong rural economy in Mexico; 6.91 vs. 5.83) and item 2.6 (expanding agricultural (dairy) trade with the U.S. is good for Mexico, 7.01 vs. 6.08).

In contrast non-dairy science majors scored higher for item 2.2 (Livestock (dairy) agriculture is more environmentally friendly in Mexico (developing countries in general) than in Wisconsin (the U.S. in general), 4.58 vs. 3.38). Interestingly, on the last day of class, a student's major impacted only one of the worldview items. Dairy science majors believed that illegal (Mexican) immigrants are taking away jobs from U.S. Citizen (item 2.3) to a greater extent than non-dairy science majors (3.40 vs. 2.43). Also on the last day of class the effect of a student's major persisted as a tendency for item 2.1 (the increase in world population will create a worldwide food crisis in my lifetime; 5.43 vs. 4.21 for dairy science and non-dairy science major, respectively). A student's major influenced the change in worldview during the semester for only one of the seven items. The change in belief that livestock (dairy) production should be promoted as a way to alleviate poverty and develop a strong rural economy in Mexico (item 2.4) was endorsed to a higher degree among non-dairy science majors than for dairy science majors (1.77 vs. -0.33).

Student's Standing. Student's standing influenced items 1.1, 1.4 and 1.5 the first day of class. For each of these three items, the two highest numerical scores were observed consistently for seniors and sophomores whereas the two lowest numerical scores were recorded for freshman and juniors (data not shown). However, the effect of student standing did not reach significance for any of the items the last day of class, for the learning gains or the change in worldviews during the semester (Table 4).

Table 4. Significance^a of Students' Major, Standing and Cohort on the First Day of Class (Pre), the Last Day of Class (Post), and for the Change (Chg.) during the Semester in Item Scores Quantifying Self-Reported Learning Gains (item 1.1 to 1.7) and Worldviews (items 2.1 to 2.7)

Items	Students' major ^b			Student's standing ^c			Student's cohort ^d		
	Pre	Post	Chg.	Pre	Post	Chg.	Pre	Post	Chg.
1. Level of knowledge and learning gains^e									
1.1	0.03	--	0.10	0.01	--	0.07	--	0.03	0.08
1.2	0.09	--	0.12	--	--	--	0.12	--	0.03
1.3	--	--	--	--	--	--	--	0.04	0.04
1.4	0.01	--	0.01	0.03	--	--	--	0.13	0.05
1.5	<0.01	0.06	<0.01	0.04	--	0.08	--	--	--
1.6	--	--	--	--	--	--	--	0.14	0.09
1.7	--	--	--	--	0.11	--	--	0.03	0.05
2. Level of agreement and change in worldviews^f									
2.1	0.05	0.06	--	--	--	--	--	--	--
2.2	0.01	--	--	--	--	--	0.06	--	0.03
2.3	--	0.01	--	--	--	--	--	--	--
2.4	0.01	--	0.01	--	--	0.15	--	0.03	0.03
2.5	0.13	--	0.10	--	--	--	--	0.06	--
2.6	0.03	--	--	--	--	--	--	--	--
2.7	0.10	--	--	--	--	--	--	<0.01	<0.01

^aAll P values noted for significance ($P \leq 0.05$) and tendencies ($0.06 \leq P \leq 0.15$), whereas non-significance ($P > 0.15$) was denoted as “--”.

^bStudent's major: Dairy science versus non-dairy science.

^cStudent's standing: Freshman, sophomore, junior or senior.

^dStudent's cohort: 2009, 2010, 2011, or 2012.

^eHow much knowledge do you have on the following topics: 1.1. Agriculture in developing Countries; 1.2. Agriculture in general in Mexico; 1.3. U.S. – Mexico Agriculture relations; 1.4. Structure and diversity of the Mexican Dairy industry; 1.5. Structure and diversity of U.S. Dairy Industry; 1.6. Mexico, its people and its cultures, 1.7. Issues related to poverty in Mexico.

^fTo what extent do you agree with the following statements: 2.1. The increase in world population will create a worldwide food crisis in my lifetime; 2.2. Livestock (dairy) agriculture is more environmentally friendly in Mexico (developing countries in general) than in Wisconsin (the U.S. in general); 2.3. Illegal (Mexican) immigrants are taking away jobs from U.S. Citizens; 2.4. Livestock (dairy) production should be promoted as a way to alleviate poverty and develop a strong rural economy in Mexico; 2.5. Expanding agricultural (dairy) trade with Mexico is good for the U.S.; 2.6. Expanding agricultural (dairy) trade with the U.S. is good for Mexico; 2.7. The Mexican and the U.S. Dairy industry will look more alike in the next 20 years.

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Student's Cohort. Student's cohort had minimal effects on the first day of class but influenced or tended to influence numerous items the last day of class (Table 4). Specifically, items 1.1, 1.3 and 1.7 varied among cohorts, but in no clearly discernable patterns (data not shown). Similarly cohort influenced worldviews on the last day of class for item 2.4 addressing livestock as a means to alleviate rural poverty in Mexico and item 2.7 addressing the possible convergence of the Mexican and the U.S. Dairy industries in the future, for which scores were 1.2 and 1.5 units lower in the 2009 cohort than the next lowest cohorts (5.73, 7.25, 7.61, 8.00 for item 2.4 and 4.73, 6.33, 6.00, 6.69 for items 2.7 in 2009, 2010, 2011 and 2012, respectively). In addition, a students' cohort influenced learning gains during the semester for four of the seven items 1.1 to 1.7. Scores increased from year to year for item 1.2 (agriculture in general in Mexico; 2.87, 4.25, 4.64 and 4.81 for 2009, 2010, 2011 and 2012, respectively) and item 1.4 (structure and diversity of the Mexican dairy industry; 3.70, 4.83, 4.96 and 5.63 for 2009, 2010, 2011 and 2012, respectively). Year-to-year differences were significant also for items 1.3 and 1.7, with lowest value observed for 2009 and varying patterns for the remaining three years (data not shown). Furthermore, there was a student cohort effect in the change in worldviews during the semester for items 2.2, 2.4 and 2.7. The patterns of change were distinct for item 2.2 and 2.4 (0.73, 1.50, -0.46, -1.00 for item 2.2 and -0.38, 0.83, 1.77, 1.44 for item 2.4 in 2009, 2010, 2011 and 2012, respectively) but increased from year to year for item 2.7 (-0.83, 0.33, 0.57 and 1.63 for 2009, 2010, 2011 and 2012, respectively).

Discussion

Designing an Elective Course in International Agriculture for Diverse Students

Except for the recent work of Murphrey et al., (2013) that focused on best practices to share international experiences, there are few studies addressing the design and assessment of an elective international agriculture classroom that enroll diverse students ranging from freshman to seniors and coming from a variety of majors. Active student engagement (Dancy and Beichner, 2002; Haak et al., 2011) and a proper alignment among the intended learning outcomes, the teaching and learning activities and the learning assessment (i.e., the grading scheme; Biggs, 1996) are common challenges that are inherently associated with course design. At least three features of our international agriculture course contributed to addressing these challenges. First, the course website was designed to provide students with a platform to engage with media-rich content before class, to

guide their preparation for in-class interactions and to demonstrate their continued engagement with post-class postings of reflection entries. Second, the complexity of the grading scale signaled to the students the importance of demonstrating their engagement with the material (in and out of class) and an emphasis on higher thinking skills rather than memorization. Third, active engagement in the classroom was addressed with individuals and group activities as preludes for classroom discussion, which can be a powerful mode of teaching and learning (Brookfield and Preskill, 2005).

The intensity of student-to-student interaction may have contributed to the important cohort effect observed in this study for the self-reported level of knowledge and worldviews on the last day of class as well as the learning gains and change in worldviews that occurred during the semester. As found here and elsewhere (Wattiaux and Crump, 2006), there are evidences for the importance of designing undergraduate classroom discussion relying in part on students' questions or thoughts on pre-assigned course material.

Measuring Students' Gain in International Agriculture

Changes observed with a pretest and posttest administered 15 weeks apart should not be attributed solely to the course. For example, serendipitous changes in the views of some students may have occurred because of news events, personal experiences or other courses taken during the same semester. However, in this study the breakdown of the survey tool in two categories of items, one to measure self-reported level of knowledge and the other to measure students' worldviews was a critical step of this study. Data of Table 3 suggested that it is easier to bring about changes in students' perception of their learning gains (items 1.1 to 1.7) than to change in their worldviews (items 2.1 to 2.7). Coers et al. (2012) reported similar findings while evaluating the impact of three short-term international field programs. Another critical step of this study was the proper wording of each item such that applying the survey instrument as a pre-test the first day of class and a post-test the last day of class enabled us to capture any cumulative effects and the relative impact of each section of the course holistically. Also, this study offered a rare opportunity to explore the relative importance of a student's major, standing and cohort. Notwithstanding a certain degree of confounding among these factors, the relatively low impact of student standing in this study may be related to the novelty of the content and the absence of prerequisite. The frequency of significances and tendencies presented in Table 4 suggested also that the substantial influence of a student's major at the beginning of the

semester subsided as the semester progress. In contrast the cohort effect was a process that built over time as it had barely any impact at the beginning of the semester, but emerged as an importance influence on students' perception of their level of knowledge and worldviews at the end of the semester and their perceived learning gains and change in worldviews during the semester.

Summary

This study provided a student-centered model of an elective course designed to engage students in understanding and evaluating critically livestock agriculture globally and the relationship between the dairy industries of the U.S. and Mexico. As shown in other studies our results suggested that a student's self-reported level of knowledge was more easily altered than their worldviews. A student's decision mid semester to attend a subsequent study abroad field program in Mexico had no effects on measured responses. At the beginning of the semester, dairy science and non-dairy science students had different worldviews, but these differences subsided over the course of the semester. In contrast differences among cohorts were not significant at the beginning of the semester, but grew significantly during the semester. Cohort became an important factor associated with students' self-reported level of learning and worldviews at the end of the semester as well as their perceived learning gains and changes in worldviews during the semester. Results of this study suggested that in a discussion-based classroom designed to engage diverse students in high-order thinking levels about international agricultural issues they initially know little about one should expect substantial year-to-year variation (i.e., cohort effect) in students' perception of their learning gains and change in worldviews.

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Soils and Civilizations: Using a General Education Course to Teach Agricultural Relevance

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Abstract

The enrollment of students to the major scientific disciplines related to agriculture has been on the decline over the past decades. While it is unclear why enrollments change, few would argue that these same disciplines have not been proactive in raising the awareness and importance of environmental disciplines towards sustainable development and the survival and stability of civilizations. Today, most students are unaware of current food production and food security issues and the career opportunities associated with our majors that are hidden inside the "College of Agriculture." We developed a general education course that addresses relevant food security issues and outlines the sciences contained within agriculture and future opportunities for feeding future generations. The objectives of this paper were to determine how our general education course changes student perception of population, food security and civilization stability and the relationship these concepts have with environmental sustainability. We evaluated student survey responses from two semesters (n=435) of our course. Fifty-two percent of students did not know a major in soil science existed, while 56% responded that they would like to take another course in that discipline. Ninety-nine percent indicated that knowledge of soil science was important in understanding food security, with 43% indicating that their opinion of these issues changed since the beginning of the semester. The food security knowledge and expertise contained within the Agriculture College is seen by students as highly relevant to their future and suggests more forthright marketing through general education courses of our expertise and career opportunities related to these disciplines should be explored further.

Introduction

Climate change, population growth, food security and sustainable intensification are all examples of the buzz words that drive the public discourse shaping our perceptions about the role agriculture and the environment will play in future generations. While roughly 12% of the world's population does not get enough to eat, most health issues in developed countries revolve around obesity and overconsumption. Population growth is occurring in areas with less productive soils that are degraded or rapidly degrading due to unsustainable agricultural practices (Bindraben, et al., 2012). Agriculture can be a source or a sink in regards to greenhouse gases (GHG) and currently produces as much as 13% of GHG emissions (FAO, 2009; FAO, 2011; FAO, WFP and IFAD 2012; Follett, et al.; 2011).

Since 1960 when our population surpassed 3 billion people, more than 4 billion new faces have populated our planet with an increase of nearly 80 million each year. Malthus (1793) warns us about how populations crash when food production does not grow at the same rate as population. By the time our current college graduates arrive at mid-career—in just 20 years—there will be another two billion persons to clothe and feed. This represents a range of problems that will require the best minds to research and solve these pressing issues. Unfortunately, most of the current young generation has a low awareness and inaccurate perceptions with regards to the importance of agriculture (Terry and Lawver, 1995, Gonzalez, 2006). This has mainly been attributed to urbanization and lack of exposure to food production activities. Farm and rural populations have declined, with less than 5% of the U.S. population now living on farms and less than 2% of the labor force working in agriculture

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(Dimitri, et al., 2005), resulting in less contact by young people with agriculture. Gonzalez (2006) found most high school students either have misconceptions about agriculture or lack knowledge about agricultural fields of study and employment opportunities.

While the National Academy of Sciences reported significant increases in the number of U.S. college graduates in agricultural and natural resources disciplines from 1987 to 2007, most of the increases were in natural resources conservation, research and animal science fields of study (2009). Several studies have also shown that the enrollment of students to disciplines related to soil and earth sciences has been on the decline since the early 1990's and 2000's (Hartemink, 2008; Collins, 2008). Unfortunately, agricultural scientists and Land Grant Universities have generally adopted a "Field of Dreams" approach to marketing our disciplines whereby we do little to entice students to explore the relevancy of our scientific disciplines to food security and civilization sustainability. In 2010, the Soil Science Society of America conducted a survey to further investigate the trends in soil science education and training (Havlin et al., 2010). One of the concerns that prompted the study was the fact that there was declining academic course offering and enrollment to soil science education programs at land grant universities, a concern also raised by Collins (2008). Havlin et al. (2010) recommended promoting soil science during earlier stages of education and opening general soil science courses up to the wider college student population as part of "general education science credits."

The National Academy of Sciences book, "Transforming Agricultural Education for a Changing World," presented an imperative to change agricultural education (National Academy of Sciences, 2009). The national research priority agenda for 2011-2015 put forth by the American Association for Agricultural Education supports this view (Doerfert, 2011). While many approaches are needed, this paper addresses one ongoing development of a curriculum to increase knowledge of agriculture and soil science by changing fundamental perceptions about agriculture that would appeal to a broader student population. The "Soils and Civilizations" curriculum presented in this paper blends soil science and agriculture with respect to history and civilization and has success at the University of Tennessee (UT) by increasing the number of degrees pursued within the "College of Agriculture." This class is populated by a variety of students with undeclared majors to upperclassmen in engineering and nursing.

The course fills a general education requirement at UT and has evolved and grown over the nine years of its offering to over 200 students each semester. Several

approaches are used in the course and data is being collected to begin to assess the impact this course has on attitudes about agriculture and soil science. Each semester several students change majors and become students in the College of Agriculture and Natural Resources as a result of taking this course.

The course addresses some of the most important intersections of agriculture and society, including:

1. Distribution of both population and food production and their impact on food security
2. Environmental degradation and its impact on food production
3. Historical analysis of the relationship between civilization success or failure and soil conservation
4. The potential impact of climate change on food production
5. An analysis of climate change as a contemporary example of the "tragedy of the commons" (Hardin, 1968; Ostrom, 1990)

These topics provide a dynamic and cross-disciplinary subject matter that draws students into the material with issues that they can relate to on a personal level. At the outset, few students think there are environmental issues that could impact their livelihood but by semester's end there has been some movement on the educational continuum. That combined with the tragic collapse of civilizations provides a dramatic background for learning about soil science, agriculture, history and geography. For example the disappearance of the Anasazi, Sumerians and Nubians provides a rich backdrop for learning about agricultural practices and the impacts of drought, deforestation and salinization.

The objective of this approach is to:

1. Educate the student populace about agriculture
2. Make knowledge of agriculture more accessible to non-agriculture students by juxtaposing contemporary food security issues with historical collapses
3. Show the importance of agriculture in addressing today's pressing issues, such as food security and climate change
4. Show the relationship between agriculture and natural resource conservation to the rise and fall of civilizations
5. Entice students to learn more about agriculture and soil science with follow-up courses and possible pursuit of a major or career in agriculture and soil science.

Materials and Methods

The course "Soils and Civilizations" was developed nine years ago at the University of Tennessee and has been taught 14 times. The class in spring 2013 had 188 students with 233 registered for Fall 2013. For

the past five years enrollment has been capped by the seating capacity of the chosen classroom; in 2013 this course is held in the largest lecture hall on campus. The approach involves presenting interesting historical stories combined with science, problems and solutions and engaging and challenging students.

There is no way to precisely measure the impact of a curriculum on students, as ideas and concepts can be presented and discussed that students may not grasp until later in their academic career. However, this paper is an attempt to quantify more immediate change in perception and attitude. During the 2012 fall semester a survey was conducted at the end of the course to characterize attitudes towards agriculture, climate change and soil science and to determine if the course had an impact on their opinions. The survey response rate was 62% (84 of 135 students). Tables 1 and 2 list the survey questions given to students at the end of the fall 2012 semester and the overall response of the students to the questions based on a Likert scale of importance (Table 1) and scale of agreement to several statements (Table 2). For the spring 2013 semester, surveys were conducted at the beginning and end of the semester to capture the actual change in student perceptions to various topics within the period of the course and to gauge how significant this course is towards enhancing perceptions about the importance of soils and agriculture to development and food security. Questions were modified and student responses are compared between the beginning and end of the semester for scale of importance questions (Table 3) and scale of agreement statements (Table 4).

Results and Discussion

Thirteen percent of respondents in the fall 2012 survey indicated they were freshmen, 34% sophomores, 27% juniors and 26% seniors, with 56% male and 44% female. Based on the responses to the survey in Tables 1 and 2, we are able to make several noteworthy observations. Most of the students signified recognition of the connection between soils, agriculture and food security with 99% of respondents indicating that the class was somewhat or extremely important for understanding why soil is important to food security. Sixty-eight percent indicated it was extremely important for them to understand food security. Seventy-six percent indicated it was extremely important to understand soil resources to avoid environmental catastrophe. Forty percent of survey respondents agreed that their understanding of the topics covered in this course changed since the beginning of this class, while an additional 43% strongly agreed that their understanding of the topics covered in this course changed since the beginning of this class.

Response to the survey also suggests that this course could have an impact on students actually considering a career in soil science. While 52% indicated that soil science was an unknown discipline to them before the course, the survey shows a change in awareness with 56% agreeing or strongly agreeing that they would like to take another class in soil science. Interestingly, 13% agreed that if they had taken the course earlier in their academic career, they might have changed their major to soil science, while an additional 5% strongly agreed they might have changed their major.

The spring semester began with 193 students registered and 181 completed the course. During this

*Table 1. Student Responses at the End of 2012 Fall Semester
Using a Likert Scale Based on Questions/Statements Asked with Answers on a Scale of Importance*

#	Questions/Statements	Mean	SD	Scale of Importance									
				Extremely		Somewhat		No Opinion		Not Very			
#	Questions/Statements	Mean	SD	# of 5's	% of 5's	# of 4's	% of 4's	# of 3's	% of 3's	# of 2's	% of 2's	# of 1's	% of 1's
1	The topics covered in this course	4.4	0.59	40	48%	42	50%	1	1%	1	1%	0	0%
2	This class is important for understanding why soil is important to food security	4.7	0.49	60	71%	23	27%	1	1%	0	0%	0	0%
3	It is important to understand intrinsic soil productivity and its link to sustainability	4.5	0.59	44	52%	36	43%	4	5%	0	0%	0	0%
4	How important would it be for you to take a student travel course to further understand food security?	3.4	1.10	14	17%	30	36%	22	26%	14	17%	4	5%
5	How important is it to understand the downfall of the Maya	4.0	0.75	17	20%	51	61%	13	15%	2	2%	1	1%
6	How important is it to understand the downfall of the Greenland Norse?	3.8	0.78	14	17%	49	58%	15	18%	6	7%	0	0%
7	How important is it to understand the role of energy in our lifestyle?	4.8	0.45	66	79%	17	20%	1	1%	0	0%	0	0%
8	How important were the oral readings in lecture?	3.4	1.02	5	6%	45	54%	14	17%	16	19%	4	5%
9	How important is it to you to understand food security?	4.6	0.70	57	68%	20	24%	4	5%	2	2%	0	0%
10	If you were forced to emigrate, how important would it be to evaluate the soils before hand?	4.3	0.82	43	51%	26	31%	13	15%	2	2%	0	0%
11	Understanding soil resources to avoid environmental catastrophe?	4.8	0.46	64	76%	19	23%	1	1%	0	0%	0	0%

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Table 2: Responses at the End of 2012 Fall Semester to Statements Based on a Scale of Agreement

#	Statements	Mean	SD	Scale of Agreement									
				Strongly Agree		Agree		No Opinion		Disagree		Strongly Disagree	
#	Statements	Mean	SD	# of 5's	% of 5's	# of 4's	% of 4's	# of 3's	% of 3's	# of 2's	% of 2's	# of 1's	% of 1's
12	This class has changed my understanding of how we feed ourselves	4.0	0.84	22	26%	45	54%	12	14%	4	5%	1	1%
13	Climate Change is a fact	4.6	0.60	56	67%	23	27%	5	6%	0	0%	0	0%
14	We collectively need to understand the effects of humans on our changing climate	4.6	0.60	57	68%	24	29%	2	2%	1	1%	0	0%
15	The information provided in this course is important for all UT students	4.1	0.96	32	38%	39	46%	7	8%	3	4%	3	4%
16	My understanding of the topics covered in this course has changed since the beginning of this class	4.2	0.85	36	43%	34	40%	11	13%	2	2%	1	1%
17	This class has taught me that understanding population growth is important to understanding our future	4.4	0.72	46	55%	29	35%	8	10%	1	1%	0	0%
18	If I had taken this course earlier in my academic career, I might have changed my major to soil science	2.5	1.09	4	5%	11	13%	24	29%	29	35%	16	19%
19	I would like to take another course in soil science	3.6	1.04	17	20%	30	36%	25	30%	9	11%	3	4%
20	The oral readings in class wasted limited class time	2.5	0.98	2	2%	9	11%	32	38%	25	30%	14	17%
21	If I knew I could make a living as a soil scientist I would become one	2.7	1.14	5	6%	15	18%	27	32%	22	26%	15	18%
22	There is more fiction than fact in this course	1.8	1.01	3	4%	3	4%	8	10%	28	33%	42	50%
23	The Bushmen are an example of a sustainable civilization	3.5	1.19	19	23%	30	36%	14	17%	17	20%	4	5%
24	We—the Americans—are an example of a sustainable civilization	2.0	1.11	1	1%	11	13%	12	14%	23	27%	36	43%
25	Global Warming is a fact and due to human activity	3.7	1.04	20	24%	35	42%	20	24%	5	6%	4	5%
26	Soil science was an unknown discipline to me until I took this course!	3.2	1.45	22	26%	22	26%	6	7%	22	26%	12	14%

Table 3: Comparison of the Mean Responses to Survey Questions at the Start and End of 2013 Spring Semester to Questions Based on the Scale of Importance Shown in Table 1

#	Questions	Beginning Survey Mean	Ending Survey Mean	Difference
1	How important were the topics covered in this course to you?	4.0	4.2	0.21
2	How important is a course on soils for understanding food security?	4.5	4.8	0.28
3	How important is it to understand intrinsic soil productivity and its link to sustainability?	4.1	4.6	0.42
4	How important would it be for you to take a student travel course to further understand food security?	3.3	3.3	-0.02
5	How important is it to understand the downfall of the Maya?	3.6	3.7	0.10
6	How important is it to understand the downfall of the Greenland Norse?	3.5	3.6	0.11
7	How important is it to understand the role of energy in our lifestyle?	4.6	4.8	0.17
8	How important is it to understand the role of agriculture in climate change?	4.5	4.7	0.17
9	How important is it to you to understand food security?	4.2	4.6	0.42
10	If you were forced to emigrate, how important would it be to evaluate the soils beforehand?	3.8	4.4	0.59
11	Understanding soil resources to avoid environmental catastrophe?	4.5	4.8	0.32

Table 4: Comparison of the Mean Responses to Survey Statements at the Start and End of 2013 Spring Semester to Statements Based on the Scale of Agreement Shown in Table 2

#	Statements	Beginning Survey Mean	Ending Survey Mean	Difference
12	I understand how we feed ourselves	3.9	4.2	0.28
13	Climate Change is a fact	4.1	4.8	0.75
14	We collectively need to understand the effects of humans on our changing climate	4.6	4.6	-0.01
15	The information provided in this course is important for all UT students	3.6	4.3	0.78
16	I have good understanding of sustainable agriculture.	3.0	4.1	1.12
17	I think population growth is important to understanding our future.	4.2	4.5	0.35
18	I would like to take another course in soil science	3.3	3.6	0.34
19	I would like to take more agriculture related classes.	3.7	3.8	0.11
20	If I knew I could make a living as a soil scientist I would become one	2.7	2.8	0.06
21	I believe technology can solve all of our problems	2.5	2.6	0.10
22	The Bushmen are an example of a sustainable civilization	3.1	3.9	0.83
23	We—the Americans—are an example of a sustainable civilization	3.0	2.9	-0.09
24	Global Warming is a fact and due to human activity	3.4	3.8	0.32
25	Soil science is an unknown discipline to me	3.4	2.3	-1.10
26	Today more countries have programs on fighting obesity than hunger	3.1	3.4	0.22
27	Climate change is a new phenomenon	2.3	1.8	-0.45
28	Sustainable energy use is an issue that should be addressed	4.2	4.5	0.27
29	Soils have little impact on food security	1.7	1.6	-0.17
30	“Civilizations” are “sustainable”	3.0	2.8	-0.17
31	I think that all students should be required to take a class in agriculture or soil science	3.3	3.9	0.59
32	I think that government has an important role in protecting natural resources	3.8	4.3	0.47

session, 175 students took the survey at the beginning of the semester and 176 students completed the survey at the end. Twenty-nine percent of respondents taking the spring 2013 survey indicated they were freshmen, 21% sophomores, 26% juniors and 23% seniors, with 60% male and 40% female. Forty-six percent indicated they grew up in the suburbs, 16% in the city, 25% in rural areas and 13% on farm. The most significant change in responses by students to survey statements at the end of the course was an increase in the mean from 2.9, where 3 was "No opinion" to 4.1, with 4, being "Agree" in response to the statement, "I have a good understanding of sustainable agriculture." Another notable change was an increase in the mean from 3.2 to 3.8 in response to the statement, "I think that all students should be required to take a class in agriculture or soil science" and from 3.5 to 4.3 in response to the statement that "The information provided in this course is important for all UT students." By the end of the course students indicated that the !Kung Bushmen were an example of a sustainable civilization (Figure 1) and our US civilization is similar to most civilizations studied that have disappeared. While the news politicizes climate change issues, students found climate change to be a fact.

But perhaps more importantly for those of us employed within the Land Grant University System, the survey results suggested that students gained a better understanding of food production and how population growth can cause civilization demise. Student perceptions moved toward the understanding that few of our current civilizations are truly sustainable with sustainable energy use as just one issue that needs to be addressed.

Summary

Based on the responses of this survey, there is a strong indication that this course has an influence/impact on the attitudes of students towards soil, agriculture and their relation to food security and sustainability. Registration for the fall 2013 semester increased 17% to a total of 233 students. Surveys will be used to continue measurements and other methods will be explored to quantify the impact of this course on enrollment to soil science courses. We think an introductory class is necessary to explain agriculture's role in civilization, subsequent civilization stability and solving global agricultural and food security problems. Quite simply, this course outlines the mission of the Land Grant Universities, a mission that can only be completed if we strive to enlist the best minds to work in agricultural sciences. Our future may depend on our success at marketing our disciplines to future generations and this course is a tool to do so.

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Agriculture Students' Interests, Preferences, Barriers and Perceived Benefits of International Educational Experiences¹

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Abstract

Internationalizing universities' agricultural science curricula may be more easily accomplished if students participate in international educational experiences. The purpose of this study was to examine Texas A&M University and Tarleton State University's college of agriculture students' interests, preferences, motivational factors and concerns about gaining international educational experiences. Most students (n=87) had never participated in an international educational experience. Students indicated that faculty-led study abroad programs (one to ten weeks in duration) were the most preferred type of international educational experience. Enriching their life experience, living in another country and improving a résumé were the top motivational factors for participation. Factors identified as prohibiting participation were financial concerns, housing and language barriers. Colleges of agriculture should promote motivational factors and limit barriers to participation in international educational experiences. A significant difference existed between students' perceptions that study abroad improved competitiveness in the global marketplace and their willingness to participate in study abroad programs. Colleges of agriculture should seek ways to increase student diversity, reduce financial barriers and incorporate student preferences for short-

term, faculty-led international educational experiences. Faculty and administrators could incorporate service-learning components and seek funding partnerships with private industry, non-governmental organizations and in-country government organizations to lower program costs.

Introduction

International components of curricula have grown in popularity and importance in colleges of agriculture (Graham, 2012). National identities are subsiding because of global awareness, improved technologies and increased attention through international media (Coers et al., 2012). Globalization affects current and future agriculture students in their personal and professional lives. Internationalizing curricula leads to increased global competencies, enhanced worldviews and internalization of different cultural concepts (Dooley et al., 2008). Most 1862 land grant universities provide courses with international agricultural content and focus (Gouldthorpe et al., 2012). However, research shows that agricultural students have limited international experiences and backgrounds and efforts to internationalize education are not meeting expectations (Irani et al., 2006; Wingenbach et al., 2003, 2006). Between 2000 and 2010, 1.5%

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of agriculture students participated in study abroad programs, while students in the social sciences averaged 23% (Institute of International Education, 2012). Why do college of agriculture students participate in study abroad programs less than students in other colleges?

Factors that affect student participation in study abroad programs are comprised of internal and external barriers. Irani et al. (2006) and Wingenbach et al. (2006) concluded that internal barriers to participation in study abroad programs included lack of cultural knowledge, language skills, family support and cultural bias. Students could overcome these barriers. External barriers include lack of time, financial constraints, conflict with classes and lack of opportunities (Irani et al., 2006). Students cannot easily overcome these barriers. Briers et al. (2010) concluded that the most important internal and external factors affecting student participation in international programs were language incompatibility and financial concerns, respectively.

Students recognize the benefit of international experiences even though barriers to participation exist. Zhai and Scheer (2004) found that agricultural college students who had international education experiences believed studying abroad was a useful experience in promoting personal development and global competencies. In addition, study abroad programs improve students' global perspectives and increase their ability to discern cultural differences (Wright and Clarke, 2010). Briers et al. (2010) found a positive relationship between students' willingness to study abroad and their perceptions of increased competitiveness in employment by participating in a study abroad program. Study abroad programs should promote students' awareness of international education experiences and minimize barriers to participation so students receive the largest benefit possible from the experience (Coers et al., 2012).

Methods

The purpose of this study was to determine students' interests, motivations, concerns and perceptions of international educational experiences. Specific objectives were to ascertain students' interests in gaining international educational experiences; to describe factors that may facilitate or prohibit them from gaining such experiences; and to determine if significant relationships existed between students' perceptions of international educational experiences and selected factors. Approval to conduct this research was obtained from the Texas A&M University Institutional Review Board.

A correlational design was used to measure college of agriculture students' perceptions of international education involvement at two universities in Texas. The cross-sectional survey collected data from college

of agriculture students at Texas A&M University and Tarleton State University. Both groups were surveyed at about the same time (Fraenkel and Wallen, 2009).

The population of interest ($N = 431$) included selected college students enrolled in introductory animal science classes at Texas A&M University ($N = 305$) and Tarleton State University ($N = 126$). The population included students from several majors and classifications. The sample size ($n = 153$) was calculated on the basis of an 80/20 split with a 5% sampling error at a 95% confidence level (Dillman et al., 2009). All classifications of students were in the target audience. Stratified random sampling was used to increase the likelihood of representativeness of the sample to the target population (Fraenkel and Wallen, 2009). Sample subgroups were students in the colleges of agriculture at Texas A&M University ($n = 116$) and Tarleton State University ($n = 37$). Errant e-mail addresses ($n = 4$) and students' rights to opt out of the study ($n = 2$) reduced the sample; 98 students (71 from Texas A&M University and 27 from Tarleton State University) provided useable responses, for a 67% response rate. The small sample size is recognized as a limitation of the study.

Non-parametric tests were used to control for non-response error (Independent Samples Mann-Whitney U Test) to compare early to late respondents on one question (students' preferences for acquiring international education experiences). The findings may be generalized to the target population ($N = 431$) because no differences existed between early and late respondents (Lindner et al., 2001).

The research instrument was a fourth adaptation of an online questionnaire used to determine attributes of European Union students; changes were made to be more representative for students in U.S. colleges of agriculture (Plomp and Murrell, 2006; Briers et al., 2010). The instrument included items to measure students' interests and preferences for international educational experiences, factors that influenced (motivated or prohibited) students' desires to gain international educational experiences and perceptions of international educational experiences.

Respondents' ranked six items from 1 (most preferred) to 6 (least preferred) for their interests and preferences for international educational experiences (Briers et al., 2010; Plomp and Murrell, 2006; Shinn et al., 2008), according to the effect each would have on their decisions about studying abroad. Overall rank was determined by weighting rank scores in reverse order; first place rank scores received six points each, while sixth place rank scores received one point each.

Factors influencing students' desires to gain international educational experiences were measured using 10 items derived from the literature (Briers et al., 2010;

Plompen and Murrell, 2006; Shinn et al., 2008). Respondents ranked each of the 10 factors using a scale ranging from 1 (does not motivate) to 4 (motivates a lot). Factors prohibiting (also known as barriers) students' desires to gain international educational experiences were measured with 14 items derived from the literature (Briers et al., 2010; Plompen and Murrell, 2006; Shinn et al., 2008). Respondents ranked the 14 prohibitive factors on a scale that ranged from 1 (not difficult) to 4 (very difficult). Students may be concerned about gaining international educational experiences through study abroad programs; 14 selected concerns that may influence students' decisions about study abroad were measured on a scale ranging from 1 (not important) to 4 (very important).

Finally, the relationship between respondents' "willingness to study abroad" and their perceived "competitiveness in the global marketplace," were measured with two questions. Students were asked if they believed their current degree would improve their competitiveness in the global marketplace and if participation in a study program would improve their competitiveness in the global marketplace. Response options were yes, neutral/unsure and no.

Data were collected with an online questionnaire. A personalized pre-notice e-mail was sent to students two days before the survey (Dillman et al., 2009). Follow-up reminders were sent to non-respondents every three days after the initial distribution for three weeks (Ladner et al., 2002). Descriptive statistics and bivariate analyses were used to analyze and report the findings of this study.

Results and Discussion

Participants (N = 98) consisted of 69% females (Table 1). The majority (72%) was Caucasian/White; 19% were Hispanic and 3% were an ethnicity other than Caucasian/White or Hispanic. Undergraduate students comprised 87% of respondents and 6% were graduate students (7% did not indicate their degree level). More than one-half (55%) reported only English speaking abilities; about one-third (30%) indicated they spoke

English and Spanish and 8% spoke English and other languages. Most respondents (89%) had no international educational experiences, such as participation in a study abroad program. These findings are congruent with the results of Moriba (2011) and Moore et al. (2011) who found that most students had not participated in international educational experiences.

Students were asked if they considered participating in a study abroad program (Table 2). More than three-fourths (76.5%) of those who answered yes were then asked to rank-order six study abroad program types derived from previous studies (Briers et al., 2010; Plompen and Murrell, 2006; Shinn et al., 2008). Those who did not (23.5%) want to consider participating in a study abroad skipped the rank-order question.

Respondents ranked registering for a university faculty-led study abroad spending one to ten weeks as the most preferred ($\sum = 307$) study abroad program type for gaining international educational experiences (Table 2). Other top ranked preferences included registering for university study abroad courses for an internship,

Table 1. Student Participants' Demographic Profiles (N = 98)

Variables	Categories	f ^z	%
School	Texas A&M University	78	79.6
	Tarleton State University	20	20.4
Gender	Female	68	69.4
	Male	23	23.5
Ethnicity	Caucasian/White	71	72.4
	Hispanic	19	19.4
	Others	3	3.0
Degree Level	Undergraduate	85	86.7
	Graduate	6	6.1
Estimated Cumulative Grade Point Average	3.00-3.49	34	34.7
	3.50-4.00	24	24.5
	2.50-2.99	19	19.4
	2.00-2.49	8	8.2
	Less than 2.00	5	5.1
Languages	English only	54	55.1
	English and Spanish	30	30.6
	English and other languages	8	8.1
Have you participated in any study abroad program?	No	87	88.8
	Yes, it was a satisfying experience	3	3.1
	Yes, but it was not a satisfying experience	1	1.0

^zFrequencies may not total 98 because of missing data.

Table 2. Students' Interests and Preferences in International Education Experiences (N = 98)

Would you consider studying abroad?	Frequencies (n = 75)						f	%
	1 st	2 nd	3 rd	4 th	5 th	6 th		
Yes, I would consider a study abroad							75	76.5
No, I do not want to study abroad							23	23.5
Preferences of those who would consider studying abroad	Frequencies (n = 75)							
Register for a university faculty-led study abroad spending 1-10 weeks abroad	28	14	9	4	7	7	307	1
Register for university study abroad course as an internship, directed study, research project, or similar international experience	12	14	24	8	8	7	285	2
Register for university courses at a university study center (e. g., Costa Rica, etc.)	10	12	17	15	9	7	258	3
Register for course at a foreign university, with transfer credits back to your university	9	11	11	11	20	7	233	4
Register for course from a study program from another U.S. university, with transfer credits back to your university	8	14	5	14	14	11	219	5
Register for a program at a foreign university and complete the degree from that university	2	4	9	5	8	37	136	6

^zOverall rank was determined by weighting rank scores in reverse order; 1st place rank scores received six points each, while 6th place rank scores received one point each. Individual weighted scores for each preference were summed to derive the overall rank.

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directed study, research project, or similar international experience ($\Sigma = 285$) and registering for university courses at a university study center ($\Sigma = 258$). These data showed that students were willing to gain international educational experiences with guidance from faculty members more so than relying on foreign universities and/or foreign programs of study.

The results are consistent with the literature (Briers et al., 2010; Institute of International Education, 2011) that students preferred faculty-led, short-term study abroad programs or similar experiences. These findings indicate students' reluctance, perhaps because of familial background and/or being inexperienced with travel abroad, to participate in international experiences on their own initiative. There may be a certain "safety in numbers" mentality among agriculture students considering study abroad participation. College of agriculture faculty should consider strongly students' backgrounds, previous international experiences and willingness to travel alone, when developing new international agricultural experience programs.

Dynamics of study abroad are changing for academic institutions nationwide. For example, the Institute of International Education report (2011) concluded that about 56% of the 270,000 students who studied abroad in the 2009-2010 school year, selected short-term international educational experiences, compared with 36% of those who participated in semester-long international experiences. Students enrolled in faculty-led study abroad experiences are rising in popularity; however, the exact number of faculty-led programs in academic institutions nationwide is unknown (Mullens and Cuper, 2012).

Research shows that faculty-led study abroad programs attract more diverse populations of students compared to traditional groups (Caucasian, female, junior-year students) that study abroad for a semester in Europe (Mullens and Cuper, 2012). These diverse populations could include minorities, students with disabilities, or lower-income students who may not have the financial support for a semester-long study abroad program.

Students preferred to register for study abroad programs held by their universities. It is important for agriculture study abroad programs to be designed for students who want to join such programs. Examples of preferred study abroad programs include uni-

versity faculty-led short-term programs, study abroad courses as internships and university courses at international study centers. Designing these types of programs may require additional faculty and administrator resources; however, such experiences have resulted in rich and rewarding outcomes for students and academic professionals (Mullens and Cuper, 2012).

Students rated ten factors that would motivate them to acquire international educational experiences through study abroad (Table 3). Respondents reported that international educational experiences enriched their overall life experiences ($M = 3.47$, $SD = .75$), provided the opportunity to live in another country or culture ($M = 3.31$, $SD = .90$) and that it looked good on a résumé ($M = 3.17$, $SD = .82$), as the top three motivating factors for acquiring international educational experiences (Table 3). The results are similar to Briers et al. (2010), who found that motivational factors for study abroad included enriching one's overall life experience, an opportunity to live in a foreign country, increased employability and it looked good on a résumé.

These results show that university faculty and study abroad program leaders could increase students' motivation to participate in international educational experiences by highlighting personal and professional benefits. Students will make an effort to participate in a study abroad if they perceive certain rewards for their efforts. Relyea et al. (2008) posited that expectancy theory leads to perceived rewards, if students expending those efforts value the rewards from study abroad. Establishing study abroad program value requires careful consideration of prospective students' perceived study abroad benefits. Students' motivation to participate in study abroad varies by the perceived values of such programs (Relyea et al., 2008). Therefore, faculty and study abroad program leaders should emphasize potential values to increase students' motivation to participate in study abroad. Similarly, universities could encourage such experiences to help students prepare for global citizenship.

Table 3. Students' Ratings of Selected Factors That May Motivate Them to Study Abroad ($n = 48$)

Factors	Does not motivate	Motivates a little	Motivates	Motivates a lot	M^z	SD
	<i>f</i>	<i>f</i>	<i>f</i>	<i>f</i>		
Enrich overall life experience	1	4	14	28	3.47	.75
Opportunity to live in another country or culture	3	5	14	26	3.31	.90
Looks good on a résumé	1	9	18	19	3.17	.82
Increased employability	2	7	21	18	3.15	.83
Important stage in my personal development	5	6	26	11	2.90	.88
Learn more about my academic specialization	4	15	15	14	2.81	.96
Learn another language	6	18	14	10	2.58	.96
Get a graduate degree	8	19	11	10	2.48	1.01
Importance placed by academic advisor/department	12	15	11	10	2.40	1.09
Opportunity to work in another country after completing current degree	10	19	12	6	2.30	.95

Note. Frequencies may not total 48 because of missing data.

^z Four-point Likert-type scale: 1 (Does not motivate) to 4 (Motivates a lot).

Respondents evaluated the level of difficulty (1 = Not difficult...4 = Very difficult) for 14 factors that would prohibit them from gaining international educational experiences (Table 4). Financial concerns were rated as most difficult. They believed that paying for the program or funding their living expenses and studies during the study abroad ($M = 3.24$, $SD = .83$) and finding affordable and adequate housing ($M = 3.11$, $SD = .94$) were the top two difficult or challenging factors (barriers) (Table 4). Others (Briers et al., 2010; Irani et al., 2006; Texas A&M University, 2010) found similar results, in that students did not study abroad because they perceived it as an expensive process. If "internationalization of the agricultural sciences" is a shared goal, then all stakeholders must seek solutions to minimize barriers, especially financial barriers, which prohibit students' participation in study abroad or other international agricultural programs. Irani et al. (2006) found that limiting barriers to participation increased students' intent to participate in international educational experiences.

Students rated the importance of 14 factors that would cause them concern while making choices about study abroad programs or foreign universities. The rating scale ranged from "not important" to "very important." The 14 concerns about gaining international educational experiences were drawn from previous research (Briers et al., 2010; Plomp and Murrell, 2006; Shinn et al., 2008) (Table 5). Affordability ($M = 3.70$, $SD = .62$) was the only concern rated as very important ($M = 3.51-4.00$), when considering gaining international educational

Table 4. Students' Rating of Factors That May Prohibit Them from Studying Abroad (n = 45)

Factors	Not difficult	A little difficult	Difficult	Very difficult	M^z	SD
	<i>f</i>	<i>f</i>	<i>f</i>	<i>f</i>		
Paying for the program or funding my living expenses and studies during the study abroad	1	8	15	21	3.24	.83
Finding affordable and adequate housing	3	8	15	19	3.11	.94
Language barriers	1	12	24	8	2.87	.73
Other financial constraints	4	14	14	13	2.80	.97
Time required making preparations	4	17	20	3	2.50	.76
Gaining admission or being accepted where I want to study	1	24	16	3	2.48	.66
It is stressful to prepare, organize, and implement	6	18	15	6	2.47	.89
Graduate on time	9	15	15	6	2.40	.96
Paperwork required for studying in another country	6	18	18	3	2.40	.81
Transferring course credits	7	19	14	5	2.38	.89
Being allowed to study abroad by my major	10	17	12	6	2.31	.97
It would be difficult for me to leave the U.S. and my family for a long time	15	18	7	5	2.04	.98
My family situation makes it difficult for me to consider the opportunity	20	11	10	4	1.96	1.02
I may lose opportunities in the U.S. if I leave for a long time	23	12	8	1	1.70	.85

Note. Frequencies may not total 45 because of missing data.

^z Four-point Likert-type scale: 1 (Not difficult) to 4 (Very difficult).

Table 5. Students' Ratings of Selected Concerns about Gaining International Educational Experiences (n = 47)

Concerns	Not important	Somewhat important	Important	Very important	M^z	SD
	<i>f</i>	<i>f</i>	<i>f</i>	<i>f</i>		
Affordability	4	6	37	47	3.70	.62
The country itself	1	1	21	24	3.45	.65
Information available about the country, university, and program	1	4	15	27	3.45	.75
The subject matter specialty of the program	2	9	14	22	3.19	.90
Accessibility to and from the U.S.	5	6	12	24	3.17	1.03
Cultural attractions in the area	1	8	24	14	3.09	.75
The language spoken in the country and/or the university	2	8	23	14	3.04	.80
For U.S study abroad programs, the reputation of the university organizing the study abroad program	1	11	23	12	2.98	.77
For university programs, the reputation of the specific program	2	12	20	13	2.94	.85
For study in foreign universities, the reputation of the foreign university	5	12	19	11	2.77	.94
Weather conditions/climate	2	19	17	9	2.70	.83
Having friends accompany me on the study abroad (for U.S. study abroad programs)	9	14	11	12	2.57	1.09
Having friends who study at that university (for study in foreign universities)	12	17	11	7	2.28	1.01
Having friends and family in the area or region	17	18	6	6	2.02	1.02

Note. Frequencies may not total 47 because of missing data.

^z Four-point Likert-type scale: 1 (Not important) to 4 (Very important).

experiences. Respondents rated 11 of the 14 concerns as "important" ($M = 2.51-3.50$), with the country itself and available information about the country, university and program, resulting in the same mean ($M = 3.45$) (Table 5). Two concerns (having friends who study at that university and having friends and family in the area or region) were rated as somewhat important ($M = 1.51-2.50$).

These results validate the findings of Briers et al. (2010), who found the most important student concerns when deciding on study abroad were affordability, the country itself and information available about the country, university and program. Financial support could be realized through college and/or university scholarships

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Table 6. Relationship between Perceptions of International Educational Experiences and Willingness to Study Abroad (n = 93).

Perceptions of International Educational Experiences	Willingness to Study Abroad		Cramer's V
	Yes	No	
Do you believe your current degree will improve your competitiveness in the global marketplace?	Yes	17	.19
	Unsure	6	29
	No	-	3
Do you believe that participating in study abroad programs would improve your competitiveness in the global marketplace?	Yes	51	.27*
	Unsure	17	12
	No	2	1

* p < .05.

or through private fundraising campaigns. It is important for college of agriculture faculty members to collaborate with university study abroad program personnel to reduce students' concerns about participating in international education experiences.

A relationship between respondents' "willingness to study abroad" and their perceived "competitiveness in the global marketplace," was significantly, positively correlated (Cramer's V = .27, p < .05) (Table 6). Students who were willing to gain international educational experiences in study abroad programs believed such participation would improve their competitiveness in the global marketplace, as opposed to students who did not or were not willing to participate or who thought such participation would not improve their competitiveness. These results supported others (Briers et al., 2010; Stroud, 2010) who found that students, who were motivated to study abroad, also believed such experience made them more competitive in a diverse and global job market.

Students who study abroad may have an advantage over those who do not when seeking employment. Students should be encouraged to market their study abroad experiences, based on the program's learning outcomes and personal and professional gains, to employers. Students could highlight their knowledge of intercultural sensitivities or increased global awareness to potential employers as positive contributions to the workplace. Future studies should examine agricultural employers' perceived values from study abroad experiences. Focused, in-depth studies on the benefits gained from international agricultural experiences, conducted in collaboration with the agricultural industry, could produce greater buy-in and financial support from industry representatives.

Summary

Internationalization of curriculum in higher education is important, especially in colleges of agriculture. A globally-minded college may be more likely to produce students as global citizens by increasing their tolerance and understanding of other cultures. One method of helping students achieve these goals is through study abroad programs. More than three-fourths of the respon-

dents in this study held positive attitudes toward study abroad. Texas A&M University and Tarleton State University colleges of agriculture could capitalize on these students' attitudes by increasing their own efforts to further internationalize the agricultural sciences through agricultural study abroad programs.

Agriculture students are willing to consider participating in international educational experiences; however, certain barriers prohibit their participation. Enrollment in agriculture study abroad programs remains low because of perceived and real barriers, such as financial concerns. Universities and faculty members should emphasize the benefits of participation in study abroad programs and seek solutions to reduce these barriers.

Universities and faculty should emphasize the benefits of participation in a study abroad program. Irani et al. (2006) stated that the greater degree to which agricultural students recognized the importance of international education, the more likely they would participate in such activities in college. However, it is important to note that intention is different than enrollment and participation in international education programs. Study abroad program leaders should help students leverage their study abroad experiences when applying for jobs, internships, or graduate school admissions.

Future research should examine agricultural employers' perceived values derived from study abroad experiences. Employers can help identify which components (i.e., language skills, intercultural competencies, agriculture skills, abilities, or knowledge gained) of study abroad programs are most beneficial for entry-level employment. Future research is needed to determine if barriers to participation differ across demographics. Minorities participate in international educational experiences at lower rates than do Whites/Caucasians; future research should determine the factors affecting this phenomenon.

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An International Experiential Learning Program: A Study Abroad Experience in Uganda¹

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Abstract

An international experience helps create an awareness of international perspectives and prepares students for a global workforce. Creating an effective study abroad experience requires strong collaboration and active involvement of local and foreign host partner institutions. This paper describes a one month summer study abroad experience in Uganda developed jointly by North Dakota State University (NDSU) and Makerere University in Kampala, Uganda to offer international educational experiences with an emphasis on animal production and health. The elements shared in this paper include: course overview and objectives; course requirements, content and evaluation, management and funding; student participation; the experiential learning experience in Uganda; impact; benefits; challenges; student comments; and future directions in promoting international learning experiences. The course supports NDSU's mission to "address the needs and aspirations of people in a changing world," its vision to "be globally identified as a contemporary metropolitan land grant institution" and its core values to "reflect and serve geographically and culturally diverse populations," "remain committed to serving people globally" and "value collaboration with colleges and universities around the world." When considering a study abroad experience,

students should be encouraged to broaden their choice of place and include non-traditional destinations such as developing countries in Africa.

Introduction

Although food insecurity is often perceived as a problem of the developing world, it is a global problem. According to projections from the Food and Agriculture Organization of the United Nations (FAO), the World Food Summit goal of halving the number of food-insecure people from 800 million in 1995 to 400 million by 2015 will not be achieved until 2030 (FAO, 2000). During the next two decades, the world's population is projected to increase by 24% and to reach 7.5 billion in 2020. Virtually all of the population increase will take place in developing countries and much of it in the urban areas (United Nations, 1999). The rapid urbanization of the developing world and associated changes in lifestyles will have profound effects on food preferences and hence on demand (Pinstrup-Andersen, 2001).

Increasing global food production and productivity is essential to achieving food security. Satisfying the global demands for increased crop yields and animal products in the coming decades will require adopting strategies that alleviate the factors contributing to food

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insecurity in developed and developing countries. These factors include insufficient investment in agricultural research and modern technology, inadequate extension services linking researchers and farmers, insufficient or improper use of inputs, poorly functioning markets, lack of appropriate infrastructure and lack of timely access to credit (Pinstrup-Andersen, 2001).

One strategy that may positively influence food security is increased investment in higher education in agriculture with an emphasis on global agricultural needs and challenges and potential solutions. As the need for increased global food and agricultural scientists is addressed, international learning experiences are becoming critical to an undergraduate's education (Zhai and Sheer, 2002). An international experience helps create an awareness of international perspectives and prepares students for a global workforce (Unruh-Snyder et al., 2011). Possessing agricultural knowledge in addition to international experience is considered an advantage by employers (Thornton, 1992; Association of American Colleges and Universities, 2007). Additionally, international learning experiences broaden cultural awareness (Unruh-Snyder et al., 2011). Combining cultural awareness with experiential learning about agricultural practices provides an opportunity for students to develop higher order thinking and problem solving skills, which is often seen as a valuable experience for a future employer (Acker and Scanes, 1998). To effectively train the next generation of agricultural professionals, universities must provide an education that recognizes the global nature of today's societies and develops the skills needed to address issues that are diverse and complex (Jones and Bjelland, 2004).

Study Abroad Summer Course: International Animal Production, Disease Surveillance and Public Health

Course Development and Goals

In 2007, North Dakota State University (NDSU) and Makerere University (Mak) jointly developed MICR 379/793 "International Animal Production, Disease Surveillance and Public Health," a summer course taught in Uganda (http://www.ndsu.edu/dce/classes/study_tours/experience_uganda_study_tour).

This is a unique graduate and undergraduate course that focuses on strengthening global perspectives in agricultural training. The study abroad summer course is a core course for a Master of Science degree and Graduate Certificate in International Infectious Disease Management and Biosecurity and an elective for other graduate programs and professional programs. The course goals are:

- To enable students to appreciate and experience tropical animal production, food safety and public health from a developing country's perspective and
- To provide for global career development opportunities, fostering an international perspective and ability to work and understand diverse animal production, food safety and public health systems.

Course Description and Objectives

The course involves international travel to Uganda for four weeks of experiential learning on topics related to tropical animal production systems; animal health; national control of zoonoses; epidemics/epizootics; bio-surveillance and biosecurity; public health practice; and food safety in the tropics in contrast to the US. The course is delivered in a format that involves field trips to sites of interest and lectures given by international experts (including faculty from Makerere University, Kampala, Uganda). The lecture notes are available online to the students during the spring semester for NDSU students and via Distance and Continuing Education (for non-NDSU students). Additionally, MICR 494 "Pre-Uganda seminar series," a prerequisite for the summer course (MICR 379/793) is offered every spring. The seminar series addresses several topics over the spring semester aimed at preparing students for the summer study abroad in Uganda.

At completion of the summer study abroad course, students are expected to: 1) develop an appreciation of tropical animal production systems in a developing country; 2) develop an understanding of unique animal health challenges under tropical conditions; 3) gain knowledge in national and global disease surveillance systems; 4) develop an appreciation of public health and food safety practices in a developing country; and 5) gain knowledge on control programs for important human and animal disease epidemics in a developing country.

Course Requirements, Content and Evaluation

Undergraduate, graduate and non-credit students can participate in the summer study abroad course. There are no required prerequisites. The majors for past students include International Infectious Disease Management, Microbiology, Food Safety/Communication, Animal Science, Veterinary Medicine, Pre-Veterinary Medicine, Veterinary Public Health, Zoology and Microbiology/Biotechnology. The course is available to non-NDSU students who are required to register through NDSU Distance and Continuing Education (DCE) office. Past students came from various institutions including NDSU, other US (Dickinson State University, Valley City State University, University of Minnesota, The Ohio

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State University, Kansas State University, University of Tennessee, Oklahoma State University, University of California Davis and Washington State University) and Canadian institutions (University of Saskatchewan) and from East Africa institutions (Uganda, Kenya, Tanzania, Rwanda and Ethiopia).

The topics covered in the summer abroad course are outlined in Table 1. Topics include: international animal production systems; bio-surveillance and biosecurity; delivery of veterinary services in developing countries - the case of Uganda; control programs for important zoonoses in Uganda; global and national control programs for epidemics/epizootics; food safety in developing countries - the case of Uganda; food safety systems in developed countries - the case of the US; delivery of veterinary services in developed countries - the case of the US; animal production systems in the US; and disease surveillance and biosecurity in the US. The summer course evaluation criteria are outlined in Table 2. Parameters evaluated include attendance of presentations and field trips, quiz, written report and a poster/oral presentation.

Course Management and Funding

Enrollment into the summer course program is administered through the NDSU Office of International Programs and the NDSU Distance and Continuing Education (DCE) office. The summer abroad course involves international travel to Uganda and as such has costs associated with the travel. The total cost of the course is approximately \$7,000 per student (including program fees, airfare, accommodation, meals, NDSU tuition and fees) (Table 3). Most students use personal funds or loans to meet course costs. Students often conduct fund raising activities to help offset program costs. In the past, NDSU provided scholarships (\$1,000 to \$5,000 per student) to NDSU students through the NDSU Development Foundation and grant funding from the US Department of Agriculture and the US Agency for International Development (USAID). Past students from other US institutions

received up to \$5,000 in grant funds from their institutions to offset program costs. Additionally, 2 students from East Africa (Uganda, Kenya, Tanzania, Rwanda and Ethiopia) were funded by USAID through the Emerging Pandemic Threats Program managed by the University of Minnesota.

Pre-Uganda Seminar Series

The pre-Uganda seminar course addresses several topics over the spring semester aimed at preparing students for the summer study abroad course in Uganda. The course objectives are: 1) acquire broad knowledge on a range of topics about Uganda (such as geography, history, culture, politics, education and agriculture) before visiting the country in the following summer;

Table 1. Topics Covered in the Summer abroad Course

Topic	Sub-topic
International Animal Production Systems	<ul style="list-style-type: none">• Intensive/Semi-intensive (commercial dairy farming; zero-grazing system)• Traditional Systems (pastoralism, communal grazing, subsistence farming)• Wild Life Production (National Parks)
Biosurveillance and Biosecurity	<ul style="list-style-type: none">The role of international and local government agencies in the surveillance and control of trans-boundary diseases of animal and public health importance - the Ugandan experience• Global – OIE (Uganda office-avian influenza surveillance; Rinderpest vaccination)• Ministry of Agriculture/Directorate of Animal Resources - Uganda experience• Activities of the Center for Disease Control (CDC) in Uganda
Delivery of Veterinary Services in Developing Countries: The Case of Uganda	<ul style="list-style-type: none">National Agricultural Advising Services (NAADS) -Uganda• Meat Inspection Services
Control Programs for Important Zoonoses in Uganda	<ul style="list-style-type: none">• Tuberculosis• Trypanosomiasis• Brucellosis
Global and National Control Programs for Epidemics/Epizootics	<ul style="list-style-type: none">• Pan African Control of Epidemics (Rinderpest, Contagious Bovine Pleuropneumonia, Foot and Mouth Disease)• Control programs for Tick Borne Diseases – (East Coast Fever (Bovine theileriosis), Anaplasmosis, Babesiosis) using dipping (acaricide) method• Control program for HIV/AIDS in Uganda• National malaria control program
Food Safety in Developing Countries: The Case of Uganda	<ul style="list-style-type: none">• Bureau of National Standards• Public Health –National Inspection service• Traditional Food processing/preservation
Food Safety Systems in Developed Countries: The Case of US	Federal agencies involved in Food Safety (FSIS, FDA, USDA)
Delivery of Veterinary Services in Developed countries: The Case of US	
Animal Production Systems in the US	
Disease Surveillance and Biosecurity in the US	<ul style="list-style-type: none">• The US Centers for Disease Control and Prevention (CDC)• The US Department of Agriculture (USDA)

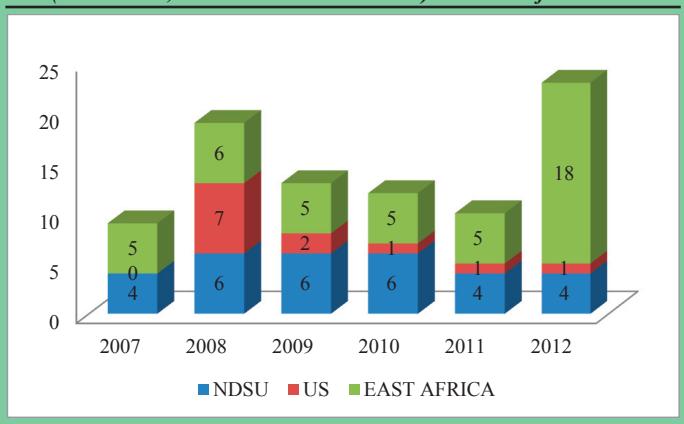
Table 2. Summer Course Evaluation Criteria

Date	Evaluation	Description	Percent of Final Grade
June-July	Class Discussion	Students are expected to attend field trips and afterwards share with the rest of the class what was learnt on the trips.	30%
At the end of the course (July 15)	Quiz	Students will be quizzed on material covered by lectures plus field trips.	30%
By August, 31 (after student returns to their Institution)	Written Report	An overall evaluation of the course including best practices and areas of improvement.	20%
By end of the Fall semester (November to December)	Poster/ Oral Presentation	This can be in form of a poster or oral presentation or seminar to a student club/association, program, scientific meeting. This activity also helps with future student recruitment.	20%

Table 3. Budget for the Summer abroad Course in Uganda

Item	Amount (US\$)
Program Fee Expenses Per Student	
Students' share of faculty cost	266.00
Entrance fees (museums, etc.)	100.00
In-house activities: accommodation at Makerere campus and in the field, meals in the field, fees and payments at sites to be visited	2029.00
Facilitator Allowances	550.00
Transportation costs: vehicle hire and fuel	309.00
Meal at Makerere University	32.00
Administrative costs and taxes	210.00
Health Insurance	76.00
Total Program Fee expense per student	3,572.00
Other Student Expenses (non-Program Fee)	
Airfare (if not included in Table 2)	2300.00
Must have Vaccinations and preventive medicines	
Yellow fever	85.00
Group consultation fee (30-60 min; \$42/adult)	42.00
Injection administration fee (first shot)	48.00
Malaria prescription (Malaron-6 tabs)	45.00
Travelers' Diarrhea (Cipro)	20.00
Total for Air fare & Must have Vaccinations & Medicines	2,540.00
NDSU Tuition and Fees Per Student	
Tuition for 3 DCE credits (Part-Time undergraduate \$269.94 per credit)	809.82
Student Fees (\$45.76 per credit)	137.28
Total for undergrad Tuition and Fees	947.10
Total Cost Per Student	
Program Fee per student	3,572.00
Non-Program Fee per student	2,540.00
Tuition and fees per student	947.10
Total program cost per student	7,059.10

Figure 1. Students that completed the summer study abroad course in Uganda (2007 - 2012). A total of 86 students trained so far: US = 42 (NDSU = 30, other US Institutions = 12) and East Africa = 44.



2) provide opportunities for students to ask questions regarding the study abroad course and at the same time address any concerns raised by parents; 3) provide an opportunity to interact with and bond with other students that plan to attend the summer course; and 4) provide an opportunity to make arrangements to fundraise for the trip. Additionally, students have access to online course materials for the study abroad program which enables them to focus entirely on the experiential learning while in the field (in the summer semester).

Student Majors and Participation

The study abroad summer course has been extremely attractive to students from NDSU and other US institutions and from a variety of agricultural and biomedical science majors. From 2007 through 2012, a

total of 86 students completed the summer course (Figure 1). Thirty of the 86 students were from NDSU, 12 from other US institutions and 44 from institutions in East Africa. Majors at NDSU included International Infectious Disease Management (8), Food Safety/Communication (7), Microbiology (5), Animal Science (4), Zoology (3), Pre-Vet Medicine (2) and Microbiology/Biotechnology (1). Majors at other US institutions included Veterinary Medicine (9) and Veterinary Public Health (3). While 86 students have taken the course over the past 6 years, many more have expressed an interest but were unable to participate for financial reasons.

Experiential Learning Aspects of the Program

In the study abroad summer program to Uganda, students are expected to learn through exposure to various experiences that are pertinent to course objectives. The course has three main objectives which include acquiring broad knowledge on: 1) tropical animal production systems (livestock and wild life); 2) food safety, public health and disease surveillance systems especially transboundary animal diseases and zoonoses; and 3) cultural exposure/interaction of students. Students are expected to meet these objectives through learning. The format through which students learn goes through five steps as outlined in the experiential learning model modified by 4-H and these are experience, sharing, processing, generalization and application (Norman and Jordan, 2012). At the start of the summer abroad course in Uganda, students are given questionnaires with learning objectives and their prior knowledge assessed and the same is performed at the end of the course. Also, sensitization is carried out at the onset by faculty and this ensures that learner goals are achieved (Norman and Jordan, 2012). Corresponding to the five steps in the model by Norman and Jordan (2012), students participate in numerous activities including: hands-on activities on animal farms and wildlife parks such as darting wild animals and interacting with farmers/local communities; sharing their experiences at the end of each activity through descriptions of what happened and why it was done; processing those experiences to identify most critical and similar themes; and making generalizations from their personal experiences and understanding the applications of those experiences at other times when faced with similar tasks.

Experience alone does not lead to experiential learning but if a student goes through all the five steps and can apply the learned generalizations in new situations, the success of experiential learning can be ascertained (Norman and Jordan, 2012). Throughout the

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summer school, participating faculty constantly interact with students to assess whether these critical steps are being developed. Group discussions with subject experts are held and students are encouraged to ask questions. In addition to the academic aspects of the program, students are given an opportunity to immerse themselves in the culture of the country, an aspect of the program that is usually well appreciated by students. The cultural immersion takes several forms depending on ongoing activities when students are in the country; some may be prearranged and may even include participation in ceremonies such as marriage and cultural dances.

Impact of the Experiential Learning Model

The experiential learning model embraced in this summer abroad course has ensured that students receive more of hands-on experience in agriculture education compared to the traditional classroom approach. This learning approach provides students with critical and problem solving skills which enables them to make more practical and strategic decisions concerning agriculture in their respective countries (Acker, 1999). More importantly, this model appears to achieve its objectives of understanding tropical animal production and its unique animal health challenges, disease surveillance systems and the food safety and public health practices in a developing country. Additionally, through the informal environment provided by field activities, communication between both host and foreign students is enhanced. The interaction of students across multiple cultures promotes diversity, generates an interest in international careers and could be an avenue for future agricultural partnerships and friendship. Furthermore, cultural sensitivity is enhanced and a mutual respect developed among students from various cultural backgrounds. Cultural sensitivity is considered a critical element in global development (Wingenbach et al., 2006).

Benefits to Students

The study abroad program to Uganda has directly benefitted students in several ways. The first benefit is cultural immersion. The program offers students the opportunity to interact with people from different cultural backgrounds, which allows students to develop cultural sensitivity. Cultural sensitivity is valued by employers; therefore acquisition of this attribute is vital in the job market. Most companies especially those targeting a worldwide audience prefer professionals that have a cross cultural exposure (Association of American Colleges and Universities, 2007; Unruh-Snyder et al., 2011). Second, pre-professional students have greatly benefitted from the course. The summer course

experience has set them apart and given them an edge over their colleagues as they compete for admission to professional colleges of veterinary medicine and medicine. In addition, while in Uganda, pre-veterinary medicine and veterinary medicine students from different schools often interact and share valuable experiences related to interview skills and the veterinary program. A third benefit is the opportunity to observe firsthand the challenges and need for an integrated strategy to disease prevention and control and the value of promoting One Health nationally and globally. This is achieved through various activities including visitations of national parks, farms and clinics where disease control, public health and food safety challenges are observed and discussed. Finally, other benefits of the program include tourism, improved communication skills across cultures, changed stereotypes and development of lasting friendships.

Challenges

The summer abroad course in Uganda has faced a number of challenges in its attempt to promote experiential agricultural learning. The most significant challenge is financial constraints. For example, there have been a number of American students that are interested in the summer course but have been unable to participate because of inadequate financial support. In the past, NDSU has provided scholarships (\$1,000 to \$5,000 per student) to NDSU students through the NDSU Development foundation and grant funding from USDA and USAID to help offset program costs. Recently the study abroad to Uganda program was awarded a grant by the NDSU Development Foundation to fund five students (\$1,000 per student) for the 2013/2014 summer course. The contribution by NDSU shows that financial aid can be sought from various institutions to offset costs so that more students can enroll into the course. Another major challenge is skepticism by students with regard to variable factors such as cultural shock, fear of social integration, safety and health concerns, insufficient support from family, homesickness, language barrier, fear of the unknown and time and climate differences. The program alleviates these fears and concerns through information sharing and addressing questions and concerns from students and parents during the Pre-Uganda seminar series. During the seminar series, alumni of the summer course are also invited to share their experiences with prospective students and to help with recruitment efforts.

Student Comments

At the end of the summer abroad course to Uganda, students are required to write a report on various aspects of the program including experiences that were beneficial, inspirational, eye-opening, most and least enjoyable

and challenging. Comments on these aspects provided by past students are shared below. Most students had never been to Africa or a developing country, as a result the summer abroad experience in Uganda appears to live a long lasting impression on students.

“This class was more than a learning experience; it was a life changing experience” - Pamela Fry, summer class of 2008.

“Traveling to Uganda for international study proved to be an invaluable and unforgettable learning experience” - Daniel Montonye, summer class of 2008.

The hands-on approach of the summer abroad course was well received by students. *“The program was full of hands-on experience and not just reading textbooks and looking at pictures. The trip was hands-on right from the start and I appreciated that most of all”* - Melissa Rae Ben, summer class of 2010.

Several eye-opening and inspiring moments were described by past students. Students observed how people in Uganda are able to live on little to no resources and were amazed at how people are able to live happily with very little.

“I was amazed at how effectively a family in Uganda can use a cow or a flock of chickens to provide for many meals along with providing them income” - Brenton Nesemeier, summer class of 2008.

A second eye-opening moment was exposure to the different types of local animal production systems including zero grazing and communal cattle grazing. Zero grazing is a type of livestock management system where animals such as dairy cattle are kept in an enclosed, shaded area and fodder and water are provided instead of letting them graze on open pastures. Zero grazing system is commonly used and promoted in developing countries by the US-based non-governmental organization, Heifer Project International. Students from the US were aware of Heifer Project International activities but had never seen a zero grazing farm.

“I did not realize before the visit how Heifer farms can be used as demonstrative farms for the surrounding areas and how others can catch the vision just by Heifer Project having a presence” - Erin Harris, summer class of 2008.

Students also observed for the first time what a communal cattle grazing systems looks like. *“It was so amazing to see cattle with different owners walk off to the same area and graze together. The idea of having common land used for the good of all was simple and amazing to see”* - Pamela Fry, summer class of 2008.

A third eye-opening and inspirational moment was the number of animal disease challenges in a tropical environment. Students learned that several human and animal pathogens were endemic to Uganda and most

were absent or considered exotic in the United States. *“I was unaware of the extent which many of these ‘exotic’ diseases are a problem in Uganda, especially tick borne disease”* - Laura Kiehnbaum, summer class of 2008.

“This class has opened my eyes to the various issues and challenges existing in developing countries and sparked my interest in worldwide issues in food safety/public health” - Erin Slinden, summer class of 2009.

A fourth eye opening moment was experiencing what it means to live in an environment with a less strict organizational structure. *“Living in a country different from my own provided the opportunity to learn from the local people, such as how to be a little less structured and a little more flexible and to discover that I could make it even when things did not go exactly as planned or as preferred”* - Melissa Rae Ben, summer class of 2010.

Numerous most enjoyable moments were shared by students, some of which were inspiring as well. Visits to wild life national parks were regarded as one of the most enjoyable moments. Students enjoyed the park experience because they were able to get up-close-and-personal to wild animals to observe and participate in procedures such as tranquilization and post-mortems. Some students had only seen wild animals in zoos and were amazed to see the diversity of wildlife in the parks. Students enjoyed learning about societal and health problems at the wildlife-domestic animal-human interface.

“Getting a better understanding of the challenges the parks face in relation to diseases and with the pastoralists was fascinating. The time spent watching and working with the animals and people in the parks was also something I will remember for all my life” - Daniel Montonye, summer class of 2008.

“Knowledge about interface problems in the parks and the villages sparked an interest in me on issues in wildlife conservation” - Kristi J. Falk, summer class of 2010.

A second most enjoyable moment was visitation of cultural sites. Visiting the cultural sites, as well as being able to converse with Ugandan students, faculty, local famers and citizens helped students get a broad understanding of the course.

A third most enjoyable moment was the opportunity to meet students from other universities in the US and Africa. Students participating in the summer course come from different universities and cultural backgrounds. Time spent with other students allows them to share a wide range of issues about life and their countries and develop lasting friendships.

“This time helped me appreciate our similarities and differences better than I could from any lecture” - Pamela Fry, summer class of 2008.

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“Whether they are from NDSU, Makerere, or another university, I know that we will be bonded for life after this experience” - Melissa Quam, summer class of 2008.

Finally, students shared their least enjoyable and challenging moments. A cultural shock was experienced by some students upon realizing that time management was not strictly observed in Uganda.

“Ugandan time is very hard to get used to when one is used to every moment of every day being scheduled and on time, if not early” - Kristi J. Falk, summer class of 2010.

Transportation conditions particularly traffic and driving were another least enjoyable moment. Traffic flow in Uganda's cities is not as organized when compared to cities in developed countries. Students from the US were thus concerned about road safety.

“Clearly transportation is something that is unavoidable and as long as everyone stays safe it is part of the culture and an experience” - Erin Harris, summer class of 2008.

Recommendations

In spite of the success of this model so far, there are several elements that need to be addressed to further improve course delivery. First, there is a need for faculty to articulate better the benefits of an international experience in a developing country and the career opportunities that the program offers. Second, when considering a study abroad experience, students should be encouraged to broaden their choice of place and include non-traditional destinations such as developing countries in Africa. Third, there should be more collaboration among institutions to avoid duplication; a consortium of institutions could develop one study abroad course led by one of the institutions. This would ensure that adequate number of students participate which would lower the cost of the program per student and help with sustainability of the program. In addition, a consortium of institutions approach would allow sharing of resources such as faculty. Finally, institutional support for faculty-led study abroad programs should be encouraged and rewarded.

Conclusion

Through the years, this study abroad experience has exposed students to learning about agricultural practices in a developing country through experience-based approaches. Students learn about the difficulties and challenges to agriculture systems; such knowledge is critical for development of improved and novel agricultural practices. In addition, the international aspect of this course fosters global awareness and may facilitate future collaborations, all of which may contribute positively to solving agricultural problems of a global nature.

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Visiting Faculty from Abroad: Contributing to Global Competency of Nutrition Students at Hawassa University, Awassa, Ethiopia

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Abstract

Significant research has been carried out examining study abroad learning experiences. In contrast, little is known about the impact of being taught by professors from abroad. Our aim was to examine the learning experiences of current and past students of the Masters in Applied Human Nutrition Program at Hawassa University, Awassa, Ethiopia, who have been taught courses by faculty from North American and European universities. Participants completed an online questionnaire through SurveyMonkey®. Respondents (46/67; 34 M, 11 F, 1 unreported; 31±6 y) confirmed that the course objectives were achieved with most reporting satisfaction with the course content, projects and assignments and critical thinking requirements. Most respondents felt that the visiting professors from abroad enhanced their program and were considerate of cultural differences. However, only 73% of respondents believed that the course material/content that was presented by the visiting professors from abroad was relevant to the nutritional concerns that exist in Ethiopia, suggesting that some students may be less interested in Western nutrition issues. Most respondents agreed or strongly agreed that being taught by visiting professors improved their second language (English) skills. Further, 74% of respondents had never left Ethiopia, but 63% reported being more likely to travel outside of Ethiopia following their interactions with visiting faculty. In general, student perspectives of visiting professors from abroad

were positive and their role, beyond teaching, may be to enhance the global competence of students.

Introduction

Although there are many goals and outcomes for international experiences, a common theme is to encourage the development of global competence. According to Russo and Osborne (2004), the globally-competent student should possess a “*diverse and knowledgeable worldview*,” “*comprehend international dimensions of his/her major field of study*,” “*communicate effectively in another language and/or cross-culturally*” and exhibit “*cross-cultural sensitivity and adaptability*.” Rimer (2004) defined globally-competent students as “*knowledgeable and responsible as they go out into the world—to know languages, to know the culture, the economics and policies of the countries they will visit, to interact in a knowledgeable way*.”

Study abroad experiences are generally thought to enhance international and cross-cultural knowledge (NAFSA, 2007) and thus, global competence. For example, American students who have participated in study abroad have a higher level of functional knowledge of global interdependence and less ethnocentrism (Sutton and Rubin, 2004). In addition, study abroad has significant long term impacts on students in the areas of continued language use, academic attainment,

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intercultural and personal development and career choices (Dwyer, 2004).

Cost is a major barrier to travel abroad experiences (NAFSA, 2007) and thus, there has been a call to internationalize the American college curriculum and thereby bring the world to students (NASULGC, 2004). However, as Kozial et al. (2011) suggest, we must prepare teachers with the knowledge and skills necessary to deliver a global education and perhaps teachers and professors require global competency to effectively deliver an international curriculum. Schuerholz-Lehr (2007) summarized that teachers who travel abroad, study abroad, find occasional employment abroad, attend international conferences and thus have international content to teach, are more likely to have world-mindedness or global awareness. International teaching experiences would be expected to increase the global competence of faculty and may facilitate internationalization of their curriculum at their home university. However, if international teaching is to be pursued as a method of increasing the global competency of faculty, the impact on the students being taught also must be examined.

Thus, when study abroad is not an option for most students seeking advanced education in developing countries due to serious resource limitations, these students may be exposed to the global environment through courses taught by visiting faculty from abroad. The impact of this “international” learning/teaching environment may be two-fold, increasing the global competence of both the teacher and the student. The impact and implications of the latter outcome, however, has been virtually unexplored.

A Case Example of International Teaching

The Masters in Applied Human Nutrition Program at Hawassa University in Awassa, Ethiopia, was initiated in 2007 to increase the number of qualified nutrition professionals in Ethiopia. Prior to the initiation of this program, few nutrition professionals were trained in Ethiopia. Overseas training to produce nutrition professionals had been the norm and these individuals often did not return to Ethiopia. Due to limited institutional resources and lack of individuals with PhD-level training in nutrition, the program has relied on visiting faculty from abroad (United Kingdom, United States and Canada) to teach their graduate courses in nutrition. Courses that have been instructed by visiting faculty from abroad include: Nutritional Biochemistry, Nutrition and Metabolism, Research Methods in Applied Human Nutrition, Principles of Epidemiology, Nutritional Assessment, Community Nutrition, Food and Nutrition Policy, Program Design and Evaluation, Maternal, Infant and Child Nutrition, Nutrition in Emergencies, Clinical

Nutritional and Dietetics, Selected Topics in Applied Human Nutrition and Biostatistics.

In 2007-08, the program had an inaugural uptake of 10 students for the two-year program. The program expanded to an uptake of more than 25 students over the next two years as demand for the program increased. In 2009, eight students from the first cohort received their Masters of Applied Human Nutrition degrees. To date, the program has graduated and enrolled 98 students and three of these students currently are pursuing doctoral training. The ultimate goal of the program is to have PhD-trained, Ethiopian-born professors teach the core nutrition courses. However, this objective is without consideration of what may be lost as a result, i.e. the unintended, positive impacts of being taught by visiting faculty from abroad.

The objective of this study was to examine the learning experiences of current and past students of the Masters in Applied Human Nutrition Program at Hawassa University, Awassa, Ethiopia, who have been taught nutrition courses by faculty who have traveled from North American and European Universities, specifically to determine if course learning outcomes were achieved and if being taught by visiting professor from abroad inspired global competence in students.

Methods

From an email contact list of current and past students of the Masters of Applied Human Nutrition Program at Hawassa University, Awassa, Ethiopia, potential participants ($n = 67$) were sent a questionnaire administered through SurveyMonkey®. Students who had not yet taken a course taught by visiting faculty from abroad were excluded from participation. The survey included demographic inquiries and questions on their learning experiences related to being taught by visiting professors from abroad.

The survey was exempted by the University of Florida’s Institutional Review Board 2 and approved by Hawassa University.

Results and Discussion

The response rate of current and past students of the Masters in Applied Human Nutrition Program at Hawassa University was 68.7% (46/67). Of the respondents, 75.6% were male and 24.4% were female (34M, 11F, 1 unreported) with an average age of 31 ± 6 years. Students from the 2008 to 2012 intake classes were contacted. Most respondents (68.9%) had completed their Master of Applied Human Nutrition degree at the time of the survey. Current employment of respondents who had graduated included as lecturers, researchers, doctoral students and nutrition consultants. All current and past

students were from Ethiopia and the major region of origin of respondents (56.1%) was the Southern Nations, Nationalities and Peoples' Region (SNNPR).

Course Satisfaction

Respondents were asked a series of questions about their experiences as Masters students with having visiting faculty from North America and Europe teach courses as part of their program's core curriculum. Courses that most respondents indicated completing as a Masters student taught by a visiting professor from abroad included Clinical Nutrition and Dietetics (97.6%), Community Nutrition (97.6%) and Nutrition and Metabolism (90.5%). Respondents were asked to answer questions with responses ranging from Strongly disagree to Strongly agree. Respondents strongly agreed or agreed that the projects/assignments given by visiting professors were suited to their interests (90.5%), enjoyed taking classes that were taught by visiting professors from abroad (97.3%) and were satisfied with the course content that was taught (92.7%). Some respondents (14.3%) reported having difficulty keeping up with the amount of material/content that was presented by visiting professors from abroad; however, 77.2% of respondents reported disagreeing or strongly disagreeing that they had difficulty.

Respondents strongly agreed or agreed that having visiting professors from abroad teach courses enhanced the Masters program offered at Hawassa University (93.2%) and thought of the visiting professors from abroad as experts in their fields of study (89.2%). The course material/content taught by visiting professors from abroad was new information for students (91.9%). Respondents reported that, overall, visiting professors were above average or excellent when evaluated on their respect and concern for students (94.1%), communication of ideas and information (90.9%) and availability to assist students in or out of class while they were teaching at Hawassa University (97.1%). However, only 70.6% of respondents felt that visiting professors were above average or excellent in their availability to assist students once they had left Hawassa University.

Respondents also were asked to evaluate and rate the visiting professors from abroad overall using a 5-point Likert scale with responses ranging from Poor to Excellent. Respondents reported that, overall, visiting professors' facilitation of learning and stimulation of interest in courses were above average or excellent, with scores of 88.2% and 85.3%, respectively.

Higher Learning Attainment

Respondents reported that assignments and exams given by the visiting professors required students to think

critically (86.5%). Respondents reported that, overall, visiting professors were above average or excellent in their ability to challenge students' thinking (67.6%), stimulate students' interest in learning more (85.3%), stimulate new thinking (88.2%), clarify concepts introduced (88.2%) and increase students' insights into what was already known (88.2%). Respondents also commented on the assistance visiting professors gave them in conducting their current and future thesis work and on the opportunity to work in novel areas of research that might otherwise be limited.

Cultural Considerations

Most current and past students (73.9%) had never traveled outside of Ethiopia. Those who reported traveling outside of Ethiopia had visited Germany (41.7%). Only two respondents reported visiting the United States or Canada and their travel was as a result of their interactions with visiting faculty from abroad.

Cultural differences represent a significant consideration when deciding to teach abroad. However, only 71.4% of student respondents reported believing that cultural differences existed between the visiting professors from North America or Europe and themselves. Of the respondents who believed cultural differences existed, 81.5% believed that the visiting professors from abroad were considerate of the cultural differences that existed. Respondents that agreed that cultural differences existed were asked to describe what they believed to be the greatest cultural differences between the visiting professors and themselves.

Responses varied and included differences in teacher-learner dynamics and a belief that "Westerners" utilize more interactive teaching approaches (classroom discussion, group projects, etc.) to promote student engagement and also have a more informal relationship with their students. Respondents commented on differences in teaching practice, with the visiting professors focusing more on practical application of teaching and learning. Respondents also reported that differences in culture influence dietary choices and recommendations and that this was not incorporated sufficiently into course content. Additionally, only 72.9% of respondents believed that the course material/content presented by the visiting professors from abroad was relevant to the nutritional concerns that exist in Ethiopia. Respondents recommended that visiting professors use global examples and current research in their teaching, but also focus on the specific nutritional needs and concerns found in Ethiopia.

In addition to exploring the intended benefits, e.g. content knowledge, of being taught by visiting professors from abroad, respondents were asked about

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possible unintended benefits or harm. Some respondents (62.8%) reported feeling more likely to travel outside of Ethiopia. Respondents also believed that being taught by visiting professors from abroad improved their second language (English) skills (81.0%). In addition, interactions with visiting professors introduced students to job opportunities in the field of nutrition that they did not know about before (54.0%) and 78.3% of respondents stated that they had stayed in contact with one or more of the visiting professors from abroad after finishing their course(s). Respondents were asked in an open-ended format about any unanticipated gains resulting from the experience of having visiting professors from abroad teach courses. Responses focused largely on cultural awareness and the opportunity to be exposed to individuals with different cultural values. In particular, values focused on time and time management, achievement and hard work and teaching practices that introduced practical skills and methods of nutritional assessment.

Summary

The results of this study suggest that in addition to providing nutrition courses that meet the traditional course objectives of content, critical thinking and general satisfaction, visiting faculty from abroad also may contribute to the global competence of students. As defined by Russo and Osborne (2004), the student respondents may have enhanced their global competence by improving their second language skills. However, although a “Western” viewpoint was provided, respondents noted that presentation of the international dimensions of the nutrition field was less than adequate, specifically due to the lack of emphasis on the major nutritional issues of developing nations, including their home country, Ethiopia. It is not clear from this study whether the students’ worldview was influenced, although it is interesting to note that the majority of Ethiopian students participating in this study did not seem to recognize cultural differences between the visiting professors from abroad and themselves. One of the goals of study abroad for American students is to improve cultural sensitivity, suggesting an inherent level of cultural insensitivity. It is possible that the Ethiopian students and graduates of the program focus on cultural similarities versus differences.

This case example of an international teaching/learning experience may have also contributed to the global competence of participating students, as defined by Rimer (2004), by increasing students’ knowledge and language skills as well as their intention to travel outside of Ethiopia. Further research is needed to evaluate the global competence of students taught by faculty from

abroad and could focus on incoming students, measuring global competence upon their entrance to the program, at program completion and early in their careers. Research exploring the relationship between teaching abroad and the global competence of participating professors and their ability to internationalize their home curricula also is needed.

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Africa-US Integrated Disease Management Consortium: A Model for International Education and International Development¹

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Abstract

In 2010, the United States Agency for International Development, The Association of Public and Land-grant Universities and Higher Education for Development awarded 11 Africa-US Higher Education partnership grants of \$1.1 million each to universities in Africa and the US to address national and regional priorities in sub-Saharan Africa. Each partnership will develop collaborative research and academic programs to build the capacity of the African and US institutions to affect change in Africa. This paper describes one of the partnerships between North Dakota State University (NDSU) and Makerere University (Mak) in Uganda that addresses capacity building in integrated management of transboundary animal diseases and zoonoses in Eastern and Central Africa. In addition, NDSU and Mak are part of a consortium of twelve North American and African institutions of higher learning working collaboratively to offer global educational experiences with an emphasis on animal production and health and food security. Several components of the aforementioned partnership will be discussed including: 1) Africa-US Partnerships, the twinning model; 2) global perspective of Higher Education training; 3) centers of excellence model and the academic-community-public-private partnerships framework under the Africa Institute for Strategic Services Development; and 4) the challenges and achievements of the NDSU-Mak partnership.

Introduction

Protecting the world from trans-boundary health threats demands a global perspective in investment in global animal and public health infrastructure (Domenech et al., 2006). While any point on the globe could be the origin of the next global pandemic, at least 70% of the known human and animal pathogens affecting animal production, public health, global trade and security are resident in Sub-Saharan Africa (AU-IBAR, 2007) and, in particular, Eastern and Central Africa (ECA). Thus this region has become a bio-risk incubator for Africa and the global community (Wakhusama et al., 2009). Sustainable interventional strategies are therefore necessary to minimize these risks.

Higher Education Institutions are among the most stable and sustainable institutions in Africa, with tremendous untapped resources of human skills and infrastructure. The Africa-US Integrated Disease Management Network (AFRUS-IDM), the Twinning Model, is a strong collaboration of Higher Education Institutions in North America and Africa that was established to advance Higher Education-led development in Africa. The US partners are North Dakota State University (NDSU), Michigan State University, Columbus State University, University of Minnesota, Kansas State University and Washington State University located in the states indicated (Figure 1). The network also includes the University of Saskatchewan at Saskatoon (Canada). The

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Africa-US Integrated

African partners include: University of Nairobi (Kenya), Sokoine University of Agriculture (Tanzania), Mekelle University (Ethiopia), Umutara Polytechnic (Rwanda), Sheik Technical Veterinary School (Somali land), Africa Epidemiology Network (Non-Governmental Organization [NGO]), Terra Nuova - Eastern Africa (NGO), The Intergovernmental Authority on Development (IGAD) and Conservation Through Public Health (NGO) located in countries shown in Figure 2.

The AFRUS-IDM network identified the program on Capacity Building in Integrated Management of Transboundary Animal Diseases and Zoonoses (CIMTRADZ) as a major pillar for transforming the East and Central Africa region. In building a system for effective disease management, the program has three principle functions: 1) providing transformative education in integrated disease management for transboundary animal diseases and zoonoses (pathogens that move from animals to people) that affect East and Central Africa (ECA) and the world; 2) promoting and supporting collaborative research and training in transboundary animal diseases and zoonoses of regional and global importance in ECA; and 3) engaging communities' positive involvement in sustainable resource management practices which promote animal health, public health and food security.

One World, One Health Concept of Training and Collaboration

In 2004, a worldwide congress of health experts convened at Rockefeller University in New York City to discuss the current and emerging diseases among human, domestic animal and wildlife populations (One World, One Health, 2004). The assembled expert panel members delineated priorities for an international, multifaceted

approach for combating threats to global health. The One World, One Health concept is the resulting worldwide strategy for building bridges in interdisciplinary collaborations and communications among human health, veterinary health, environmental health, research science, sociology, economics and public policy. This group of experts presented 12 guiding principles with the aim of preventing zoonotic disease outbreaks and maintaining ecosystem integrity "for the benefit of humans, their domesticated animals and the foundational biodiversity that supports us all." The CIMTRADZ project is predicated on the first guiding principle of the One World, One Health concept to *"recognize the essential link between human, domestic animal and wildlife health and the threat disease poses to people, their food supplies and economies and the biodiversity essential to maintaining the healthy environments and functioning ecosystems we all require"* (One World, One Health, 2004).

Africa-US Partnerships, the Twinning Model

The AFRUS-IDM partnership is one of 11 Africa-US Higher Education partnerships which were each awarded \$1.1 million in 2010 to address national and regional priorities in sub-Saharan Africa. Each partnership has two lead institutions (one in Africa and one in the US) and is focused on developing collaborative research and academic programs to build the capacity of the African and US institutions to affect change in Africa. The 11 partnership grants are outlined in Table 1. Each of the 11 partnerships developed a five-year strategic plan including a long-range vision to build human and institutional capacity development. The partnerships are funded by the US Agency for International Development (USAID), Association of Public and Land-

Figure 1. US States where partner institution members of the Africa-US Integrated Disease Management (AFRUS-IDM) network and Capacity Building in Integrated Management of Transboundary Animal Diseases and Zoonoses (CIMTRADZ) project are located.

US States where partner institution members of AFRUS-IDM and CIMTRADZ project are located.

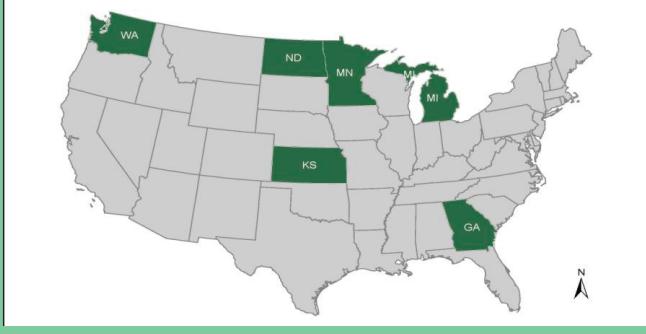
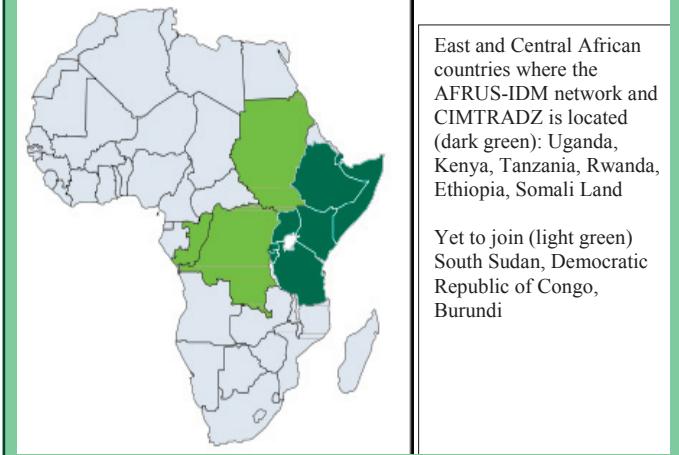


Figure 2. East and Central African countries where the Africa-US Integrated Disease Management (AFRUS-IDM) network and Capacity Building in Integrated Management of Transboundary Animal Diseases and Zoonoses (CIMTRADZ) project is located.



grant Universities (A-P-L-U) and Higher Education for Development (HED) for two years. The A-P-L-U continues to work to secure additional funds to expand the initiative in the years to come. Additional details on the partnerships are available at <http://www.partnership-africa.org/content/africa-us-higher-education-initiative-partnership-grant-recipients-announced>.

In the context of the 11 grants, institutional capacity building comprised curriculum development, dual or joint degrees, faculty exchanges, joint research, scholarships, community outreach, national and international conferences, sustainable partnerships with government support as defined by HED (<http://www.hedprogram.org/>).

Capacity Building in Integrated Management of Transboundary Animal Diseases and Zoonoses (CIMTRADZ):

Project Objectives

North Dakota State University (NDSU) and Makerere University (Mak) is one of the 11 Africa-US Higher Education partnerships addressing capacity building in integrated management of transboundary animal diseases and zoonoses in Eastern and Central Africa. The three broad objectives of this project include: 1) develop an integrated and coordinated surveillance system for zoonotic and transboundary diseases; building animal, human and environmental diagnostic capacity using a “One Health” approach; 2) develop capacity for enhanced research addressing zoonotic and transboundary diseases in Africa, including collaborative research programs, scientific workshops, grant management, data-sharing initiatives, documentation of research deliverables and dissemination of new information; and 3) improve educational capacity and outreach activity through development of education initiatives, including: joint

degrees, distance education and integration of student outreach through research, advocacy and servant leadership.

How the AFRUS-IDM Partnership and CIMTRADZ Project fit into Priorities of NDSU and Mak

The AFRUS-IDM partnership aligns well with NDSU goals of internationalization of higher education and NDSU’s mission to “address the needs and aspirations of people in a changing world,” NDSU’s core values to “reflect and serve geographically and culturally diverse populations,” “remain committed to serving people globally,” and “value collaboration with colleges and universities around the world” (NDSU, 2009). Additionally, the project aligns well with Mak College of Veterinary Medicine, Animal Resources and Biosecurity’s 5-year strategic plan and the Uganda government’s national goals of reducing poverty and the strategic goals of the Inter Africa Bureau for Animal Resources (AU-IBAR) and the World Animal Health Organization (OIE).

Global Perspective of Higher Education Training

North Dakota State University (NDSU) is a US Land Grant institution that provides excellent educational opportunities to its students. However, in assessing the educational needs of an increasingly international student population in an ever more connected world, the institution concluded that a global view is needed to ensure that NDSU’s students are appropriately prepared to participate in the issues that will affect both local and worldwide health and policy decisions. Global perspectives in health management and related sciences are critical to the safety of our agricultural

Table 1. The Eleven Africa-US Higher Education Partnerships Awarded Grants by USAID/APLU/HED to Address National and Regional Priorities in Sub-Saharan Africa

US lead institution	Africa lead institution	Area of interest
Tuskegee University, Alabama	International Institute for Water and Environmental Engineering, Burkina Faso	Water and Environmental Technology
University of Connecticut, Connecticut	Addis Ababa University, Ethiopia	Sustainable Water Resources Development and Management
Brown University, Rhode Island	University of Ghana, College of Health Sciences, Ghana	Higher Education Initiative for Human Immunodeficiency Virus infection/Acquired Immunodeficiency Syndrome (HIV/AIDS)
Syracuse University, New York	Kenyatta University, Kenya	Building Capacity through Quality Teacher Preparation
Colorado State University	University of Nairobi, Kenya	Sustainability of dry lands
Indiana University, Bloomington, Indiana	University of Liberia, Liberia	Life Sciences Planning Initiative
Michigan State University, Chancellor College, Michigan	University of Malawi, Bunda College of Agriculture, Malawi	Ecosystems Services: Linking Science to Action in Malawi and the region
The Ohio State University, Ohio	Université Gaston-Berger, Senegal	Develop a West African e-Education Agro-Ecology Program for Sustainable Food Production
University of Cincinnati, Ohio	University of Cape Town, South Africa	Solar Energy Devices for Africa
Virginia Polytechnic Institute and State University, Virginia	Catholic University of Sudan, Sudan	Rebuilding Higher Education in Agriculture to Support Food Security, Economic Growth, and Peace Efforts in Post-Conflict Southern Sudan
North Dakota State University, North Dakota	Makerere University, Uganda	Capacity Building in Integrated Management of Zoonoses and Vector-borne Diseases in Eastern and Central Africa

resources and public health, yet very few opportunities existed for their study at NDSU. Educators at NDSU realized that this perceived gap in knowledge could not be filled without providing the unique educational experiences that international training provided. As a result, international collaborations were developed with a number of universities and institutes around the world. Students graduating with exposure to international health management will be better prepared to address prevention and control of pandemic diseases at the source and crisis management at local, national and international levels. Through faculty exchange, curriculum building and research collaborations, NDSU has fostered a partnership with Mak that began as a study abroad summer course for transboundary and zoonotic disease management in 2007. In 2011, NDSU/Mak approved a joint Master's degree in International Infectious Disease Management and Biosecurity. This degree provided the faculty from ECA the opportunity to earn graduate degrees in US institutions (north-south interaction) or at larger ECA institutions (south-south interaction). The summer abroad experiential learning program and the Master's degree in International Infectious Disease Management and Biosecurity were described in detail elsewhere (Ekiri et al, 2013a; Ekiri et al, 2013b).

Formation of Consortia of Universities Model

Formation of a consortium of US universities with a commitment to international education in East and Central Africa (ECA) in the area of management of infectious diseases - in particular transboundary animal diseases and zoonoses - was a new paradigm that recognized the unique strengths of each institution in the partnership. This model enables resource sharing and increased student access to valuable educational, research and community service programs while maintaining rigorous academic standards. The consortium is largely networked electronically to minimize costs with conference calls held on a regular basis. The consortium of ECA universities with Mak as the lead institution provides students from the ECA region greater access to institutions of higher learning, not only in the African partners, but in the US institutions. This interaction is accomplished through conferences held at Mak where all ECA and US partners attend and training is offered to participants from ECA institutions through workshops held in conjunction with the conferences. In turn, regional ECA partners provide opportunities for on-the-ground research projects and service learning which are invaluable training tools for both understanding the nature of unique issues in specific communities and for engaging the community's buy-in for informed disease

management strategies that have a positive impact on the community's health and prosperity. In the context of the CIMTRADZ project, service learning is viewed as an educational experience in which students participate in an organized service activity that meets identified community needs and reflect on the service activity in such a way as to gain further understanding of course content, a broader appreciation of the discipline and an enhanced sense of civic responsibility (Bringle and Hatcher, 1996).

Distance and Continuing Education Aspects of NDSU and Mak Partnership Programs

As an initiative to expand the delivery of instruction to a wider audience, NDSU has significantly expanded its offerings through the office of Distance and Continuing Education (DCE). The Dean of Graduate and Interdisciplinary Studies provides leadership for DCE. This structure has led to innovations and enhanced educational opportunities to students locally, nationally and internationally. As an example of one such program, the Great Plains Institute of Food Safety offers BS, MS and PhD degrees, as well as graduate and undergraduate certificates in Food Safety. These degrees and certificates are built upon core courses which are all offered through DCE. Through this delivery mechanism, the faculties of NDSU and Mak can provide an integrated curriculum with global perspective to students from both institutions. Delivery of the program through DCE also provides an opportunity for cross-pollination of teaching concepts across the faculty of Mak and NDSU and will be expanded upon in the later years as US and ECA partners are incorporated into the mix.

Engaging With Africa

Today, 70% of the fastest growing economies are in Africa (AIEA, 2013a). About 90 million African households joined the consuming class by 2011 - an increase of 31 million households in a decade. In addition, Africa is now the world's youngest continent with 62% of the population under the age of 25 (AIEA, 2013a). Education, especially tertiary education, will play a major role in sustaining and expanding the positive trends on the continent. However, given the size of the youth explosion, many African countries currently lack the financial and human resources to provide quality education to the increasing demands for tertiary education and skills development (AIEA, 2013b). These constraints clearly present opportunities for US higher education institutions to engage with Africa.

Centers of Excellence Model

The Center of Excellence at Mak's College of Veterinary Medicine, Animal Resources and Biosecurity (CoVAB) is a new paradigm that encourages collaboration between institutions and countries for the first time in Africa. The Center provides a framework for integrating East and Central Africa institutions of higher learning on one hand and government institutions and community on the other. The incorporation of the Center in institutions of higher education provides a framework for the integration of education, research and service objectives in an established infrastructure. The Center serves as a regional powerhouse with core laboratory research facilities that can be used for both research and training. The Center ensures a regional impact while empowering local people and institutions. Human and institutional capacity building is the primary goal of the AFRUS-IDM partnerships. To fulfill the goal of institutional capacity building at Mak, the NDSU-Mak partnership and the CIMTRADZ project with support from the Ugandan government established the Africa Institute for Strategic Services Development, AFRISA (www.afrisa-africa.org) within the Mak Center of Excellence.

Although AFRISA was established within Mak, it functions under a model similar to a non-governmental organization (NGO) in Africa or similar to a research and technology park at a US institution, providing for institutional autonomy. The institute provides academic-community-public-private partnerships that connect the university, funding agencies and communities. The institute serves as an ideal conduit for the Center to partner with policy makers to give and receive information about policy issues and change. Through AFRISA, the university, facilitated by private funders uses students to address specific targeted problems in the communities. The institute has an element of service learning incorporated into the training where students practically address a community need while learning. A successful case study of academic-community-public-private partnerships is the Stamp Out Sleeping Sickness (SOS) campaign in Northern Uganda conducted by AFRISA through Makerere University (<http://www.stampoutsleepingsickness.com/>). The Mak Center and AFRISA coordinate education, research and community engagement between NDSU and Mak in the first phase of the award period (2011-2013) for the CIMTRADZ project and will continue to do so across the regional partners in both the US and Africa as the project matures.

Community Engagement for Sustainable Change

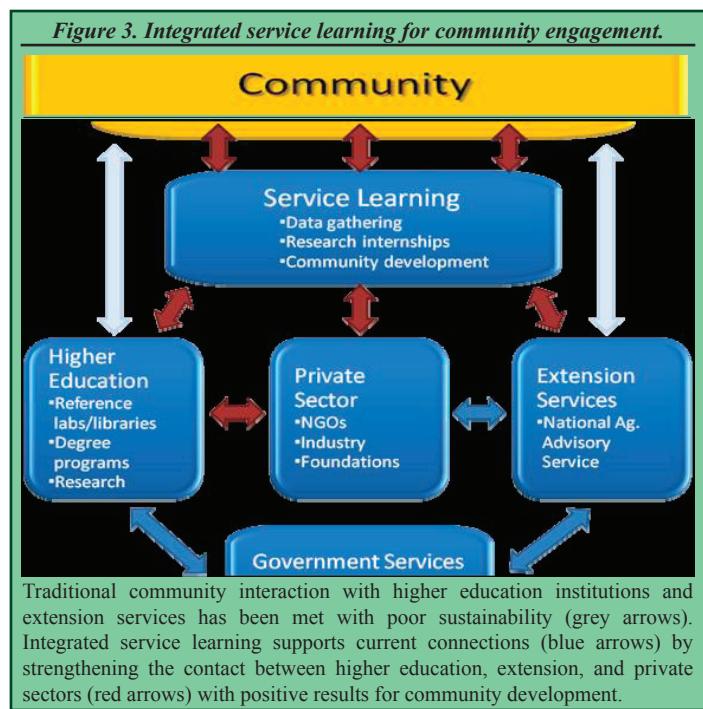
In Uganda, student involvement in prevention and control of infectious diseases in communities has helped

reduce the prevalence of certain diseases. For instance, veterinary students from Mak's College of Veterinary Medicine, Animal Resources and Biosecurity (CoVAB) in collaboration with the Uganda Veterinary Association were employed to successfully halt the impending overlap of two different pathogens (*Trypanosoma gambiense* and *T. rhodesiense*) that cause Trypanosomiasis in humans (Sleeping sickness), a zoonotic infection. Co-infection with Trypanosomes seriously compromises the treatment of the disease and adversely impacts the health of farmers of the northern and eastern regions of Uganda. This type of grass roots organizational structure is necessary for sustainable change in disease management practices as it helps identify practical and reasonable alternatives to solving specific problems faced by the community.

In the CIMTRADZ project, a One World, One Health service learning model was proposed. This model is unique in that groups of interdisciplinary students work with the community to first gather data on transboundary and zoonoses of local impact. Teams consist of animal health students (Veterinary School), public health students (School of Public Health) and environmental health students (Institute of Environment and Nature Resources) to affect a coordinated effort to address a health problem in the community. At present, these students are required to complete service learning as part of their training. The teams of students are funded to conduct epidemiological surveys of disease prevalence and local issues. The team approach ensures an integrated solution to the problem. When student teams work with local people on local problems, sustainability of the solution is maintained. Figure 3 shows the poor connection between education, government and extension services that obstructs infectious disease management practices for transboundary and zoonoses currently. Through service learning and student involvement, the cooperation and connection between universities, policy making government departments and the community (red arrows) has been strengthened.

Challenges to NDSU and Mak Partnership

Implementation of the CIMTRADZ project presented some challenges which included: insufficient infrastructure or resources at partner institutions (both US and Africa), institutional support (higher administration, trained personnel in international partnerships) and support for project personnel (resources, cost share, release time); frequent turnover of administrative leadership; delay in institutional review approvals from legal and regulatory structures governing research in different institutions - the Institutional Review Board (IRB) and Institutional Animal Care and Use Committee



(IACUC); and inefficient communication between all parties involved in the project - HED, African and North American partners.

Achievements of NDSU and Mak Partnership

This partnership has led to institutional capacity building in both lead institutions (NDSU and Mak). In addition, NDSU and Mak developed a dual degree, leading to student exchange and joint research opportunities. Human capacity building included training of at least 10 MS degree graduates and 5 MS fellowships. Benefits of the MS degree were described in detail elsewhere (Ekiri et al, 2013b). Lead partners held two conferences/workshops in Uganda with AFRUS-IDM partners (in January and July 2012) and several presentations were shared. Partnerships were developed with other synergist programs such as USAID Emerging Pandemic Threats (EPT) program which later provided funding for twelve ECA participants in the summer study abroad course in 2012. Benefits of the summer abroad course were described in detail elsewhere (Ekiri et al, 2013a). The partnership also contributed to the founding of the consortium on One Health Central and Eastern Africa (OHCEA). The AFRUS-IDM network continues its drive for regional integration and synergism and recently attracted the Africa-Union Bureau for Animal Resources (AU-IBAR). The AU-IBAR has proposed a concept for a regional network for holistic curricula development and harmonization, Science, Technology and Innovations (STI) in the wider veterinary and animal value chains. Furthermore, the AU-IBAR recently sanctioned major

demographic studies on the veterinary and animal sciences training and research institutions. The AFRUS-IDM African PI was the team leader of the investigation. These studies are driving the strategic direction policy in the region and consequently repositioning the veterinary institutions to help build a resilient Africa.

Conclusions and Recommendations

There is an urgent need for higher education institutions to transform current teaching, learning and collaborative research methods into those of a global nature as we look to the future. International education is increasingly part of a strategic national agenda for many countries in developing global relationships, economies, higher education systems or workforces (AIEA, 2013b). As teaching and learning methods shift to a global context, assessment of the impact of a global approach to teaching and learning is important. Given the need for multi-disciplinary teams to solve complex problems, universities will need to enhance existing networks and relationships in order to achieve this goal. The consortium model is one that is cutting-edge for teaching, learning and research and has the potential to transform international higher education.

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A Repeated Measures Study of the Short-Term Influences of High-Impact Practices on College Students' Learning Styles

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Abstract

In this study, we present a quantitative, repeated-measures component of a larger mixed-method case study. Using Kolb's Learning Style Inventory (2007), repeated measures were taken to test the stability of experiential learning style and learning mode of 33 College of Agriculture and Life Sciences students enrolled in a semester-long high-impact learning field experience. A one-group pretest-posttest design was used to test the effect of learning environment on students' experiential learning mode between pretest and posttest measures during the fall 2012 semester. A single pretest measure was taken at the beginning of the semester and a single posttest measure was taken at the conclusion of the semester. Results indicated the greatest pretest score was active experimentation and the least pretest score was concrete experience. The highest posttest score was concrete experience and the lowest posttest score was in abstract conceptualization. In determining if high-impact learning experiences and environments changed students' preferred learning style during a semester, results indicated significant differences ($p \leq 0.05$) existed between pre- and post-measures of the learning modes concrete experience and active experimentation.

Introduction

The underpinnings of experiential learning in agricultural education can be traced back to Stimson (1919) and Dewey (1938) who, among others, noted the importance of establishing connections between education and experience. The relatively extensive

integration of experiential learning into agricultural courses and curriculum has been noted for decades (Roberts, 2006). Student participation in experiential learning is essential to the learning process and deepens students' understanding and sensitivity to the outside world (Dewey, 1933; Kolb, 1984).

Numerous approaches and examples of integrating experiential learning into post-secondary courses exist in the literature, for example, business (Prussia and Weis, 2004), marketing (Craciun and Corrigan, 2010) and community building (Arnold and Paulus, 2010). Many of the noted approaches include laboratory work, project-based activities and field trips. However, it is important to further note that not all experiential learning is equal in implementation or outcome (Roberts, 2006). Similarly, the diverse population and backgrounds of students pursuing post-secondary education in the United States would suggest that not all approaches to experiential learning are equally effective or result in the same outcomes for each student.

Ensuring student success and positive educational outcomes was noted as a priority for the Association of American Colleges and Universities (AACU) in its 2008 report by Kuh.

According to Kuh (2008), cohesively integrating multiple types of experiential activities into a course or series of courses increases the likelihood of students reaching greater academic goals and standards. Therefore, faculty members in Texas A&M University's Department of Agricultural Leadership, Education and

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Communications developed and implemented a semester-long course with an integrated field experience to provide students an opportunity to engage in real-world experiences and interact with people and situations they may not have encountered before. The course and its associated activities and the general approach to the field experience were developed in line with the theoretical foundations noted by Kolb (1984), Knowles et al. (2005), Roberts (2006) and other relevant literature (e.g., Hickcox, 2002; Blackburn, 2008; Matusevich et al., 2009).

Literature Review

Learning is the process of gaining knowledge through the transformation of experience (Kolb, 1984). Roberts (2006) noted that experiential learning is a cyclical and on-going process that enables learners to directly experience the phenomenon being studied. In his Model of the Experiential Learning Process, Roberts (2006) proposed, “[the process] begins with an initial focus of the learner, followed by an initial experience. After the experience, learners reflect on their observations and then formulate generalizations” (p. 22). As the sequential process continues, the learner progressively tests, reflects and refines his or her generalizations through additional experiences and experimentation (Roberts, 2006).

Researchers have suggested that some learning style characteristics are obtained biologically (Restak, 1979); whereas, others have suggested some individuals develop learning styles through experience (Dunn et al., 1996). Additionally, learning styles have been noted to change in various environments (Lidon et al., 2011; Nulty and Barrett, 1996) and over time (Nulty and Barrett, 1996); however, the amount of time needed for changes to occur is not evident in the literature.

Environment

Among researchers accredited with the advancement of experiential learning, Kolb (1984) suggested that genetic qualities as well as environmental conditions contribute to stable learning styles. When students find themselves in a particular learning environment with different influential factors, their learning style preferences change (Nulty and Barrett, 1996). If students are exposed to stable factors, then their choice of learning style appears to be stable (Nulty and Barrett, 1996). Conversely, students' choice of learning style becomes less stable when the student is exposed to more personal and environmental changes. “[Because] both kinds of influence co-exist, the choice of learning style at any given time depends on the balance between the different factors and the students' own preferences” (Nulty and

Barrett, 1996, p. 333). Thus, it is reasonable to believe that environment may influence how people learn.

Time

Nulty and Barrett (1996) supported the concept that learning styles change between learning environments. “*A preferred learning style reflects a tendency rather than an absolute and students may adopt different learning styles in different situations*” (Marriot, 2002, p. 46). After completing a cross-sectional study between college students, studies found that individuals who are exposed to an increase in changes in content material will, over time, develop changes in their learning preferences (Nulty and Barrett, 1996; Pinto and Geiger, 1991). According to Baker and Robinson (2011), research by Sims and Veres (1989) showed that learning styles can change within a short period of time. When considering students' adaptation in preferences, the point in time at which learning styles change is unknown. Moreover, the literature does not contain an obvious answer to whether constant, concentrated learning demands (i.e., environment) will influence students' learning styles to change from the beginning of the school semester to the end (i.e., time).

Conceptual Framework

This study draws from two conceptual bases: Kolb's (1984) experiential learning theory and Kuh's (2008) High Impact Educational Practices. Kolb (1984) noted that well-rounded learning progresses through all four phases of the learning cycle. Each phase has a beginning and an ending point associated with a learning mode: concrete experience (CE), abstract conceptualization (AC), reflective observation (RO) and active experimentation (AE). Kolb (2007) suggested the learning cycle may begin at any learning mode, but progresses sequentially. Concrete experience and abstract conceptualization are the two learning modes a learner phases through to take in experience. In the concrete experience mode, learning occurs through a specific experience and when the learner is being sensitive to feelings and relating to people. Abstract conceptualization is the ability to get things done through actions by taking risks and influencing people. For learners to progress from concrete experience to the abstract conceptualization, they must go through the reflective observation mode. Similarly, learners must experience active experimentation to proceed from abstract conceptualization to concrete experience. When a learner reflects on experiences by viewing issues from different perspectives, they are going through the reflective observation stage. The active experimentation mode involves the learner's ability to learn by thinking and logically analyzing ideas.

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Individuals can be categorized by one of four learning styles: diverging, assimilating, converging and accommodating (Kolb, 2007). The diverging style combines the concrete experience and reflective observation learning modes. People who learn through the diverging style tend to prefer to observe situations and use different points of view to approach concrete situations. Individuals who use the assimilating style typically combine the reflective observation and abstract conceptualization modes and use a wide range of abstract ideas and concepts to put information into a concise, logical form (Kolb, 2007). Combining the abstract conceptualization and active experimentation modes, individuals who learn in a converging style use practical ideas and theories to find the best solutions to questions or problems. When using the accommodating style, learners combine active experimentation and concrete experimentation modes and prefer to be involved in a hands-on activity to carry out plans (Kolb, 2007). Conversely, Kolb (2007) stated, “not everyone falls into one of the four dominant styles” (p. 6). Students can also have a balance between each of the learning modes creating another style of learning referred to as balancing. In the balancing style, students are more likely to be “comfortable with a variety of learning modes” (Kolb, 2007, p. 6). Kolb’s learning styles provide “promising policies and effective educational activities and practices” to increase student engagement and success (Kuh, 2008).

High-impact experiences are a form of experiential learning that “...challenge[s] students to develop new ways of thinking about and responding immediately to novel circumstances as they work side by side with peers on intellectual and practical tasks, inside and outside the classroom, on and off campus” (Kuh, 2008, p. 15). According to Kuh (2008), high-impact experiences require students to spend more time and effort to complete tasks assigned and place students in situations where it is mandatory that they interact with faculty and peers. The different forms of high-impact learning that are used to increase rates of student retention and student engagement are first-year seminars and experiences, common intellectual experiences, learning communities, writing-intensive courses, collaborative assignments and projects, undergraduate research, diversity/global learning, service learning/community-based learning, internships and capstone courses and projects (Kuh, 2008).

The forms of high-impact experiences that were used in this study were common intellectual experiences, learning communities, writing-intensive courses, collaborative assignments and projects, diversity/global learning and service learning/community-based learning.

Kuh (2008) explained common intellectual experiences as a set of required common courses and/or required participation in a learning community that combine broad themes with a variety of curricular or co-curricular options. Learning communities involve students working closely with faculty and other students by taking two or more linked classes as a group. Furthermore, linked classes should be closely related, allowing students to integrate learning across courses as well as an opportunity for students to gain information and form questions across disciplines that matter beyond the classroom. Writing-intensive courses emphasize writing at varying levels of instruction and across the curriculum; they also enhance students’ ability to produce various forms of writing for different audiences throughout different disciplines. Collaborative assignments and projects allow students to learn to accept and understand varying opinions and problem solving techniques to gain skills in working with individuals from different backgrounds (Kuh, 2008).

The diversity/global learning form of high-impact experience allows students an opportunity to deal with issues such as racial, ethnic and gender inequality in a study abroad or through experiential learning in a community (Kuh, 2008). Service learning, or community-based learning, provides students with field-based experiences to apply knowledge learned in a classroom setting to a real-world setting and then in turn reflect on the experiential learning experiences (Kuh, 2008).

A similar study was conducted by Lindon et al. (2011) where activities were developed to enhance individual and group learning in relation to their environment. According to Strong et al. (2012), students’ learning environment is highly correlated to student motivation and the social presence construct. Lindon et al. (2011) suggested that further research should be conducted in this area in other contexts to improve the theory’s functioning. Although there is limited research regarding changes in learning styles, it could be argued that students’ learning style preferences are likely to change as they are exposed to diverse teaching styles and high-impact experiences; however, the amount of time needed for these changes to occur is unknown.

Purpose

Researchers have noted learning style changes during the college years, i.e., freshman to senior year; however, it is unclear how much time is required for changes to occur (Nulty and Barrett, 1996). Perhaps a more perplexing issue is whether learning environment influences changes in learning style. Long-term implications of environmental influences on learning style and, more importantly, the prospective learning

outcomes are expansive. However, studies of learning and learning environment related to high-impact practices are not overtly evident in the literature. Further, baseline or normative data are not readily available and are likely to vary greatly based on environmental factors. Therefore, this study investigated the short-term influences of high-impact practices on college students' learning styles. Additionally, this study will provide a basis of comparison for future studies to better understand the short- and long-term relationship among learning styles, high-impact practices and environment. Research investigating various learning environments has been common and ongoing in agricultural education literature; however, much of the agricultural education research is relatively focused on classroom (Ball and Garton, 2005) and distance education environments (Strong et al., 2012) and does not specifically investigate high-impact learning environments. Further, as Danielson (1996) noted in a description of her teaching framework, "*As educators study the components and consider them within individual context, they can determine which components and elements are applicable and which are not. ... Only educators in that setting can make those determinations*" (p. 5). Thus, concern regarding contextual differences, i.e., general secondary education versus agricultural education, substantiates the need for inquiry into high-impact learning environments in agricultural education. Therefore, this study was guided by two research questions:

RQ1: Do students' Kolb Learning Style Inventory (LSI) mode scores change during a semester (pretest vs. posttest)?

RQ2: Do high-impact learning experiences and environments change students' preferred learning style during a semester?

Method

Design

In this study we present a quantitative, repeated-measures component of a larger mixed-method case study of 33 students enrolled in a semester-long course at Texas A&M University. In the College of Agriculture and Life Sciences, students are encouraged to enroll in classes that provide a high-impact experience (Sams, 2010). This semester-long course included a ten-day field experience through the Midwest and Southern United States. Students participated in high-impact experiences and experiential learning activities related to agriculture, culture, global society, diversity, American resilience and youth development.

Ideally, social science experiments will randomly

assign individuals to equivalent samples; one serving as a baseline to which another sample will be compared to test the effects of the experimental variable (Campbell and Stanley, 1963). Although a randomized experimental design is ideal for determining cause and effect, in some situations, including those presented in this study, a randomized experiment is not practical or feasible because the size of the population is a limiting factor. Therefore, a one-group, pretest-posttest design was used to test the effect of learning environment on students' experiential learning phase between pretest and posttest observations. A single pretest observation was taken on a group of subjects (O1) at the beginning of the fall 2012 semester. During the course of the semester, the intervention (X) occurred. Then, a single posttest observation was taken again (O2) at the conclusion of the fall 2012 semester.

Subject Characteristics

Subjects included in this case study consisted of 30 undergraduate and three graduate students who were enrolled in ALEC 380 at Texas A&M University during the fall 2012 academic semester. Among the students, nine were male and 24 were female; five were Hispanic and 28 were Caucasian; they ranged in age from 18 to 30 years, with grade-point-averages that ranged from 2.3 to 4.0 on a four-point grade scale.

Instrumentation

The commercially available, paper version of Kolb's Learning Style Inventory (LSI) was used to collect data for this study. According to Kolb and Kolb (2005), the LSI was created for individuals to understand how they learn from experience and the approaches they take in the learning process. By understanding their own learning process, learners are more equipped to make the best decision that will enhance their ability to learn in different learning styles (Kolb and Kolb, 2005). Kolb and Kolb (2005) identified an additional use of the LSI as "*a research tool for investigating experiential learning theory (ELT) and the characteristics of individual learning styles*" (p. 8).

External validity of the LSI was established using age, gender, educational level and educational specialization. Results from various studies with large populations have deemed the instrument valid. According to Platsidou and Metallidou (2009), reliability of the LSI was estimated using Cronbach's (1951) alpha coefficients for each learning mode: concrete experience (CE; $\alpha = 0.81$), reflective observation (RO; $\alpha = 0.72$), abstract conceptualization (AC; $\alpha = 0.76$) and active experimentation (AE; $\alpha = 0.76$). Interpretations of alpha coefficients differ in the literature. Nunnally (1967)

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proposed that estimates of reliability greater than .80 were often wasteful for basic research. Conversely, Field (2009), suggested that estimates of reliability should exceed .80. Given the widespread use and acceptance of Kolb's (2007) LSI, reliability estimates were considered acceptable.

Procedure

The data collection process began after receiving approval from the Institutional Review Board at Texas A&M University (Protocol Number: IRB2013-0109) and followed the requirements and specifications set forth in the approval notice. Data were collected by direct administration of the LSI at two points; once at the beginning of the 2012 semester (August) and once at the conclusion of the semester (December). Data from the paper questionnaires were entered into and analyzed using IBM® SPSS® Statistics version 21.0. To address research question one, μ and σ were reported for pre- and post-measures by LSI construct. Additionally, changes in pre- and post-measures were also reported by LSI construct.

To address research question two, a one-way repeated measures analysis of variance (ANOVA) was used to test the effect of measure on each of the LSI construct scores. For each analysis, LSI construct score (AC, AE, CE, or RO) was used as the dependent variable and measure (pre vs. post) was used as the independent variable. The alpha level was set a priori at .05. Degrees of freedom, F ratio, p-value, effect size (η^2) and power ($1 - \beta$) were reported for each analysis, when appropriate. Effect sizes were interpreted according to Tabachnick and Fidell (2013) who noted ANOVA guidelines for small ($\eta^2 = .10$), medium ($\eta^2 = .25$) and large ($\eta^2 = .40$) effects.

Results and Discussion

The first research question of the study was to investigate the effect of time by testing if high-impact learning experiences and environments changed students' LSI scores between the pretest and posttest during a semester. Descriptive statistics for student LSI scores are reported in Table 1. The greatest pretest score was in AE ($\mu = 38.97$; $\sigma = 4.82$) and the least pretest score being in CE ($\mu = 26.27$; $\sigma = 6.95$). The highest posttest score was in CE ($\mu = 37.15$; $\sigma = 6.80$) and the lowest posttest score was in AC ($\mu = 26.27$; $\sigma = 6.19$). Concrete experience exhibited the greatest increase between pre- and post-mean comparisons ($\Delta = 2.36$) and AE indicated a decrease among pre- and post-mean comparisons ($\Delta = 1.82$). The least change occurred in RO ($\Delta = 0.52$).

Most frequently, students preferred AE and CE as their learning modes, which suggests students had an accommodating learning style. Although there was a shift in posttest scores, these scores indicated the class used AE and CE as their preferred learning modes, meaning the students maintained an accommodating learning style throughout the semester.

The second research question of the study was to determine if high-impact learning experiences and environments change students' preferred learning style during a semester. Significant differences ($p < 0.05$) existed between pre- and post-measures of the learning modes CE ($p = .004$) and AE ($p = .044$). Despite the significant results, it is important to note that satisfactory power of analysis ($1 - \beta \geq .80$) was only reached for CE, which reflected a small effect size ($\eta^2 = .232$). Therefore, significant results for AE may be due to chance or error. Results of the ANOVA are noted in Table 2.

Summary

Based on these findings, one could argue that students' preferred learning style may change as students are exposed to high-impact experiences and diverse environments. Although the amount of time needed for students learning styles to change is undetermined, this study supported Nulty and Barrett's (1996) findings that changes in learning style preferences occur. The findings suggested concrete experience (CE) exhibited the greatest increase between pre- and post-mean comparisons. Does this suggest that high-impact experiences have the

Table 1. Parametrics and Descriptive Statistics of Students' Pre- and Post-Measures of Learning Modes from the LSI (n = 33)

Learning Mode	Pre		Post		Δ	
	μ	σ	μ	σ	M	SD
Abstract Conceptualization (AC)	27.33	7.43	26.27	8.00	-1.06	4.85
Active Experimentation (AE)	38.97	4.82	37.15	6.80	-1.82	4.99
Concrete Experience (CE)	26.27	6.95	28.64	7.48	2.36	4.37
Reflective Observation (RO)	27.42	6.25	27.94	6.19	0.52	4.84

Table 2. One-Way Repeated Measures Analysis of Variance for the Effect of Measure on Four Dependent Variables: Kolb's LSI Construct Scales (n = 33)

Scale	df	SS	MS	F	p	η^2	$1 - \beta$
Abstract Conceptualization (AC)							
Between	1	18.56	18.56	1.58	.218	.047	.230
Error	32	375.94	11.75				
Active Experimentation (AE)*							
Between	1	54.55	54.55	4.38	.044	.120	.528
Error	32	398.46	12.45				
Concrete Experience (CE)*							
Between	1	92.18	92.18	9.65	.004	.232	.853
Error	32	305.82	9.56				
Reflective Observation (RO)							
Between	1	4.38	4.38	0.37	.545	.012	.091
Error	32	375.12	11.72				

Note. * Indicates significant results ($p \leq .05$)

greatest potential for initiating change in learning style? This warrants additional investigation. Conversely, AE showed the greatest decrease among pre- and post-mean comparisons. Did this group of undergraduate students fail to make the connection between active experimentation and the other learning modes proposed by Kolb? Is this true for similar groups of students engaged in high-impact learning experiences? Further inquiry is needed to investigate these trends.

Findings revealed shifts in learning mode, but no change in learning style. This has many practical implications for post-secondary agricultural educators. When conducting a high-impact learning experience, curriculum, teaching, assessment/evaluation and learning outcomes may require more in-depth planning and scrutiny by the instructor. This requires more resources such as faculty time and effort, potentially higher investment cost in curriculum and materials and additional personnel to deliver instruction, whether it be faculty or teaching assistants. This supports Kuh's (2008) notion that high-impact experiences require more time and effort for all parties involved.

Sims and Veres (1989), as cited by Baker and Robinson (2011), suggested learning styles change in a short period of time. This aligns with results of this study in that significant differences were found between pre and posttest scores within a semester. It can also be concluded that high-impact experiences may influence time as a variable in experiential learning style and mode. The group learning style scores experienced a shift in posttest scores in AE and CE. However, the shift in learning modes did not move from the accommodating learning style. Although the shift in modal scores was toward experiencing, the final group score remained in the accommodating quadrant. This supports Kolb's (2007) posit that using the accommodating style helps learners combine active experimentation and concrete experimentation modes which involve hands-on activities. The experiential learning activities that the students participated in were focused toward experiencing and doing. This substantiates Dunn et al. (1996) work that suggested some individuals develop learning styles through experience. This may account for the lack of significant change in learning styles.

Recommendations

Recommendations for Practice

Future recommendations for practice target students, professors and Colleges of Agriculture. A recommendation of this study is for students to participate in high-impact-learning experiences with open minds to reap the full benefits of different learning situations and environments. Another recommendation is to encourage profes-

sors to move away from the traditional classroom and lecture method of teaching and implement high-impact experiences to explore the effect of high-impact learning within the learning styles of students. Coupled with changing learning environments, high-impact experiences could be used within the College of Agriculture and Life Sciences to promote differences in learning styles.

Recommendations for Research

Based on the findings of this study and the current literature base, many opportunities exist for further research. The researchers suggest conducting randomized experiments or quasi-experiments to examine larger samples, utilizing random assignments to treatment and control groups. This would provide a more robust analysis of data and provide greater generalizability of results. Additionally, we recommend additional qualitative studies be conducted to better understand high-impact experiences and experiential learning styles.

Finally, further research is needed to determine if demographic differences, school classes and specific high-impact activities are required to have a change in learning style. This research would further contribute to a more substantial foundation to determine if changing learning styles are a result of high-impact experiences and learning environments.

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An Intrinsic Case Study of a Post-Secondary High-Impact Field Experience

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Abstract

This qualitative case study focused on an eight-day field experience course developed using Kolb's model of experiential learning (1984) and guided by the Knowles et al. (2005) theory of adult learning. The field experience encouraged students to embrace their education by developing as an individual, inquiring into the unknown or misunderstood and exploring unfamiliar environments. Thirteen undergraduate students and one graduate student were exposed to cultures and beliefs not necessarily familiar or similar to their own. Cohort members reflected multiple times during the course. Data were analyzed using qualitative methods to reveal the impacts of the experiential learning instances of the experience. Seven major themes were revealed in students' reflections: emotion, service, culture, barriers/risk, professionalism, career and desire to know. As educators, it is important to look at opportunities to incorporate both small- and large-scale field experiences into course curriculum. The emphasis on study abroad programs is evident at many universities and, in some

cases, overshadows the unique experiences that could occur during a domestic study away. Thus, it is important that educators do not overlook the opportunities for high-impact learning to occur within the bounds of the United States.

Introduction

College students are "discovery-based" learners (Brown, 2000, p. 5); however, discovery-based learning experiences in agricultural education are not a new concept. For decades, traditional and non-traditional agricultural education has used the application of knowledge in hands-on settings (Barrick, 1989) in both pedagogy and andragogy settings. The principle of andragogy, as proposed by Knowles et al. (2005), posits adult learners must know the why, what and how of learning, which will likely motivate them to engage in the learning process. Richardson (1994) found that adult learners believe "a well-planned program delivery system that includes opportunities to see, experience and

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discuss should greatly enhance the learning process" (para. 1).

For a higher level of learning to occur, observations, thoughts and experiences (Boud et al., 1985a) should be combined to reinforce a meaningful learning environment. Kolb (1984) claimed that a process grounded in concrete experience and enhanced by reflection is experiential learning, which occurs when new experiences and perspectives encourage new ways of thinking and performing (Cullingford, 1990). This style of learning takes place anywhere a student focuses on a subject, is challenged through an action, receives support and feedback from others and reflects or debriefs on the experience (Joplin, 1981; Roberts, 2006). Experiential learning, which some argue (Baker and Robinson, 2011; Knobloch, 2003; Roberts, 2006) is the foundation of secondary agricultural education, is a key component in facilitating achievement of educational outcomes (Roberts, 2006). However, experiential learning does not occur haphazardly.

Texas A&M University's College of Agricultural and Life Sciences has emphasized the need to provide experiential learning opportunities through field experiences and to engage students in diverse, cultural experiences that provide them with innovative learning experiences and empower them to serve and lead (Sams, 2010). Innovative learning experiences enable students to expand their foundation of knowledge and embrace "learning as a lifelong process" (Hickcox, 2002, p. 124) by linking their academic and personal lives to the experiences they encounter during the field experience (Jakubowski, 2003). Field experiences challenge students and faculty members to interact beyond the classroom and immerse themselves in opportunities that require critical thinking (Hickcox, 2002) and create a learning environment that includes experiential learning (Kolb, 1984) and academic rigor (Washor and Mojkowski, 2007).

Therefore, implementation and preparation of field experience curriculum needs to be developed in a way that ensures rigorous content is applied throughout the course (Daggett, 2005). Winston et al. (1994) defined rigor as "an environment that is intellectually challenging and demanding" (p. 12). Challenges in professional and real-life events help students learn to use their full range of talents and abilities (Matusevich et al., 2009). Students accept greater responsibility when in rigorous learning environments, which can result in lifelong learners (Matusevich et al., 2009). Academic rigor is not simply grades, memorization and regurgitation; rather academic rigor encompasses critical thinking, high standards and expectations and cognitive development (Graham and Essex, 2001). Washor and Mojkowski

(2007) stated "*rigorous experience is reflective and intimate. A rigorous project causes students to take some type of action, to develop their own questions, to observe and retain key information and to realize how hard it is to do something well*" (p. 85).

Conceptual Framework

Kolb's model of experiential learning (1984) and Knowles et al. (2005) theory of adult learning as well as relevant literature (e.g., Hickcox, 2002; Blackburn, 2008; Matusevich et al., 2009) served as a foundation for the development of a post-secondary, high-impact field experience at Texas A&M University. Learning through experience and forming opinions based on the experience are gateways through which knowledge is created (Kolb, 1984). Students can begin the experiential learning cycle by thinking and making an abstract hypothesis about the topic, which often occurs in the traditional classroom environment (Kolb, 1984). Experiential learning provides students opportunities to actively test the knowledge gained through hypothesis testing (Kolb, 1984), theory and lecture (Bringle and Hatcher, 1999), which builds a foundation for deep learning. "*Anytime a person learns, he [or she] must 'experience' the subject—significantly identify with, seriously interact with, form a personal relationship with [the subject].*" (Joplin, 1981, p. 17). Although students attend class and learn skills, many times they do not have the opportunity to experience the subject until their career because of lack of resources, time and logistics.

Experience unremittingly changes learning and modifies students' thought processes (Kolb, 1984). However, "... experience alone is not the key to learning" (Boud et al., 1985b, p. 7). Experience must be followed by thorough reflection of the experience to complete the experiential learning cycle (Boud et al., 1985b; Kolb, 1984). Knowles et al. (2005) and Lamm et al. (2011) suggested students should be given different types of reflection and learning opportunities to accommodate a variety of learners. Students can strengthen their understanding of concepts through reflection (Boud et al., 1985b; Kolb, 1984), which is the preferred method of learning enhancement by adult learners (Richardson, 1994).

Furthermore, Knowles et al. (2005) theory of adult learning is defined as "the process of adults gaining knowledge and expertise" (p. 174) through self-directed learning opportunities, which do not require an instructor or a classroom because learning can occur independently during daily life (Knowles et al., 2005; Merriam, 2001). Adult learning posits that adults learn experientially, learn as problem solvers and learn best when the topic is of immediate value to them (Knowles et al., 2005;

Merriam, 2001). Knowles et al. (2005) stated that adults should be engaged in the development of their own learning experiences, which Merriam (2001) referred to as self-directed learning. In addition, it is probable that adult learners may be highly confident and self-directed in one domain of learning, but dependent and hesitant about another (Knowles et al., 2005; Pratt, 1988). Lamm et al. (2011) confirmed that adult learners would rather participate in experiential learning activities and develop new ideas and opinions using an experiential approach.

Purpose

To provide a more rigorous curriculum offering, five members of the Department of Agricultural Leadership, Education and Communications at Texas A&M University designed, developed and implemented an andragogical experiential learning based field experience to expose students to cultures and beliefs that were not necessarily familiar or similar to their own. Therefore, the purpose of this study was to describe the andragogical experiential learning based field experience from multiple perspectives and to reveal the impacts of the experiential learning during the experience.

Context of the Study

The experience was designed as an eight-day immersion excursion that included travel through the Midwest to the National FFA Convention. Students who participated in the experience had the opportunity to engage in new experiences and interact with unfamiliar people and situations. The students were treated as self-directed learners (Knowles et al., 2005; Merriam, 2001) participating in an experiential learning process (Kolb, 1984; Roberts, 2006). The assistant professor and graduate teaching/research assistants assumed the roles of facilitators of learning as described by Knowles et al. (2005) and Merriam (2001).

The field experience began with two informational meetings about potential stops, application steps, course requirements and cost. Interested students submitted a one-page letter of application to explain why they wanted to participate in the experience, what they hoped to gain from the experience and how the experience could help them reach both short- and long-term career goals. The letters were reviewed separately and as a cohort to choose a cohort that represented the goals of the field experience. In addition to the application letter, students were required to have a minimum grade point average of 2.5, attend formal class meetings before and after the field experience and pay all costs associated with the experience. About one-half of the students who participated in the experience had been involved in FFA and one student had served as an Area FFA Officer in

Texas. Additionally, two of the students had participated in the CDE that he/she assisted with at National FFA Convention. None of the students had participated in a similar field experience and only two had participated in any type of field experience while studying at Texas A&M University. Further, 12 of the 13 undergraduates had achieved at least sophomore standing and about half of them had never traveled outside of Texas.

On Sunday, October 16, 2011, at 7 a.m., a cohort of 13 undergraduate students, one graduate student, two graduate teaching/research assistants, one Fulbright Scholar and one assistant professor began the field experience in two 15-passenger vans. After traveling ten hours, the cohort stopped at Joplin, Missouri, to view the destruction caused by the May 22, 2011, tornado. For two hours, students walked among the wreckage, took photographs and notes and visited with residents. The cohort continued to Columbia, Missouri, where members spent the second day with a Regional Extension Specialist from the University of Missouri and interacted with members of the Amish and Mennonite communities in Central Missouri. Students visited with the Amish and Mennonites, asked questions about their culture and observed a local produce auction. Throughout the field experience, students observed primitive and modern agriculture practices and experienced cultural practices different from their own.

Day three the cohort traveled to Moline, Illinois, to tour the John Deere World Headquarters and Seeder Manufacturing Facility. The tour of the seeder facility gave students an overview of the history of John Deere and an inside look at the production of the seeder units. The field experience continued to Indianapolis, Indiana, where the cohort spent the fourth, fifth and sixth days assisting with the National FFA Convention. Students helped with the National Agricultural Mechanics, Agricultural Communications and Food Science and Technology Career Development Events (CDEs); interacted with FFA students at Texas A&M University's recruitment booth; attended the opening ceremony; visited the career fair to network and learn more about job opportunities in their desired fields and participated in the National Collegiate FFA Convention events. For some students, it was their first experience with CDEs and the National FFA Convention.

The cohort left Indianapolis on October 21, 2011 and stopped in St. Louis, Missouri, to develop nighttime photography skills at the St. Louis Gateway Arch. Day seven the students returned to tour the Arch, take daytime photos and visit and interact with the designers and builders of the structure. After the Arch tour, travels continued to Boonville, Missouri, for a tour of the Anheuser-Busch Clydesdale breeding farm. Students

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took photos of the farm and asked questions of the Clydesdale caretakers. On the last day, October 23, 2011, the cohort stopped at the Oklahoma City Bombing Memorial. Many students in the group were too young to remember or were unaware of the history of the Oklahoma City Bombing. Students toured the site where the Murrah Federal Building once stood and interacted with park rangers who described the bombing and its effect on the community.

The cohort arrived home at 8 p.m., which concluded the field experience portion of the course. Together, the cohort traveled more than 3,000 miles in two 15-passenger vans during eight days, visited five land grant institutions (University of Missouri, Lincoln University, Oklahoma State University, Langston University and University of Illinois at Urbana-Champaign), volunteered at National FFA Convention and toured seven United States' landmarks, communities or facilities. Additionally, students reflected (Boud et al., 1985b; Knowles et al., 2005; Kolb, 1984; Lamm et al., 2011) throughout the field experience (during the application process, before and after each stop on the trip and final reflection (one to three pages) within one week after the trip). Students were also asked to submit ten photos (see Figure 1) that were indicative of their experience and their final projects.

After returning, students were required to schedule individual meetings with the assistant professor and/or graduate teaching/research assistants to discuss their final project. A group of four agricultural leadership students returned to campus to reestablish a collegiate FFA chapter, compose a detailed two-year plan of action and develop an outline for establishing the chapter based on the knowledge gained through theory, lecture (Bringle and Hatcher, 1999) and hypothesis testing (Kolb, 1984). Nine agricultural communications students tested their knowledge gained through coursework by writing and designing a three-page layout and feature story about a tour of their choice. The assistant professor and graduate teaching/research assistants hosted six three-hour work nights to assist students with their final projects and individual follow-up meetings were offered if requested. Students were also required to attend a follow-up class meeting for final presentations and an after-action roundtable discussion with department faculty members on December 9, 2011.

Methods

The purpose of most qualitative research is "... to describe, understand and interpret and not to test hypotheses" (Lichtman, 2006, p. 105). Many approaches to inductive research strategies exist including ethnography, grounded theory and case study (Dooley,

2007). "Ethnography refers to a systematic description of a culture that is based on direct observation of a particular group" (Lichtman, 2006, p. 63), generally over a prolonged period of time (Cresswell, 2007). We first considered ethnography as an approach to this study; however, we determined approaching this study as a case study was more appropriate because we believed the 16-week duration of a semester was not sufficiently prolonged for us to fully understand the ethnographic implications of the students we studied. Although this study did not meet the strictest definitions of ethnographic research, it drew several parallels to ethnographic research because "*like ethnography, case study data collection involves a wide array of procedures as the researcher builds an in-depth picture of the case*" (Cresswell, 2007, p.132).

The case study approach to qualitative research explores a bounded system, collecting in-depth data from multiple sources of information (Cresswell, 2007). "Observations usually occur in settings that already exist, rather than in contrived settings" (Lichtman, 2006, p. 137); hence, case study researchers typically "...try not to disturb the ordinary activity, not even to test, not even to interview, if we can get the information we want by discrete observation or examination of records" (Stake, 1995, p. 12).

Data collection processes began after receiving approval from the Institutional Review Board (Protocol Number: IRB2013-0109) and followed the requirements and specifications set forth in the approval notice. Data were collected using a wide array of procedures to build an in-depth picture from multiple sources of information (Cresswell, 2007). As Stake (1995) recommended, we attempted not to disturb students' ordinary activities during the field experience. To complement observation, qualitative researchers often use existing documents to gather information including student journals and reflections (Lichtman, 2006). Therefore, data collected through documents, participant observation, direct observation and photographic artifacts were used to describe, understand and interpret the experiences of the students involved in the field experience.

Observations occurred during the fall 2011 semester by four participant observers and one direct observer: One male assistant professor participant observer; two graduate teaching/research assistants participant observers, one male and one female; and one female undergraduate student participant observer. The direct observer was a female graduate teaching/research assistant who did not participate in the field experience but observed the on-campus activities and interacted with participants.

To increase confidence in our interpretation, methodological triangulation was approached using participant observation and direct observation, which was followed by review of artifacts (written reflections and photographs) to meet the "...obligation to minimize misrepresentation and misunderstanding" (Stake, 1995, p.109). Written artifacts were collected at the beginning of the semester and after returning from the trip. Photographic artifacts were collected near the conclusion of the semester and were included because "*visual images are central to our culture and communication. They provide another avenue of meaning. They represent a kind of reality captured by the researcher*" (see Lichtman, 2006, p. 149). Observations occurred through various lenses (i.e., undergraduate student, graduate student and faculty) and both written and photographic artifacts were also analyzed through various lenses.

Analyses began by organizing the data by type (reflections, notes, photos, projects) and numbering the pages and photos by participant. We first reviewed the data individually, making notes during the process and forming initial codes from patterned regularities in the data (Creswell, 2007). Then as a group, we aggregated the data into categories, which were collapsed into seven themes through direct interpretation and presented in the results. Member checks were conducted throughout the research process and a draft of the results was reviewed by participants to confirm the accuracy of the findings.

Results

Seven major themes were revealed in students' reflections: emotion, service, culture, barriers/risks, professionalism, career and the desire to know. Some themes were dominant; whereas, others were more subtle.

Emotion

Students experienced a variety of emotions: anger, sadness, pride, excitement, disappointment, passion, loneliness, happiness, closeness and anxiety. Students did not expect to encounter widespread devastation in Joplin, especially months after the tornado. "*These people [Joplin residents] have lost everything, except for their hope. I am inspired by them and visiting these [two] places truly put my life and all the things that I have been blessed with into perspective.*" These feelings sometimes led to inner turmoil and challenged the students to think critically about what they believed to be true about themselves, their culture and others. "*My thoughts [about Joplin] were challenged to the point of confusion. How could we live in the greatest country on earth when our very neighbors are living without electricity, running water and homes in complete disaster??*"

Although we could argue that immersion in a profoundly devastated area such as Joplin should arouse numerous emotions, we did not expect the range of emotions, scenes of tranquility and peace students had. The stops that produced the most varied and evidential emotions were the products of devastation: Joplin and Oklahoma City. Months after the Joplin tornado, widespread destruction was still evident and was compared to a war zone by a student who was also a veteran. Although we cannot suggest that all students will retain these memories for the remainder of their lives, some did mention they would "always remember" the devastation-produced sites.

Service

Students participated in small acts of altruism and large-scale organized service efforts and they wrote messages to Joplin on the Wall of Hope. "*Seeing all the destruction and devastation in real life just made me want to help all the people.*" In addition, students reflected on the devastation in Joplin and on good and bad stories they heard from survivors: people helping rebuild their community, a firefighter caught stealing from a home that had been destroyed and the "slightly jaded view of broadcast journalism" as a result of the media "forgetting" the victims. Service opportunities also gave students a chance to learn about one another. While in Indianapolis, students collected unused lunches from the CDEs to distribute to homeless people they met the day before. One student was grateful that another student had an altruistic idea to donate the wasted food to homeless people and learn about those living on the Indianapolis streets. "[We can't] always assume the worst when we see people in a position like Jake [a homeless man]."

Additionally, students realized the amount of work that goes into coordinating the National FFA CDEs and developed respect for those individuals who work to make the events happen. Service activities helped the students develop a sense of pride about themselves, their effort, their country and their school. Students' service at the College of Agricultural and Life Sciences' National FFA Convention student recruitment booth showed visitors the welcoming and inclusive educational setting of Texas A&M University. While working at the recruitment booth, students had a chance to teach others about the university's spirit and tradition.

Culture

The field experience enabled students to experience American cultures and United States' subcultures: agriculture, youth conventions, Texas A&M University, Texas, history, shock/displacement, minority and

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diversity. The most commented on subculture was the Amish in central Missouri. Many students had prior knowledge of Amish lifestyle, which reached as far back as students' elementary school classes, but most of the reflections about the Amish farmers' appearance were stereotypical. Students quickly realized their stereotypical assumptions were "blatantly wrong" (Bunch et al., 2011, p. 91). As the students compared their values to the Amish values that guide work, dating, family, education and communication, introspection was evident.

One female student stated, "*There are a few moments that seem to take your breath away and challenge your previous beliefs as an individual...*" when referring to the Amish, Joplin and Oklahoma City Bombing.

One student said that visiting with the Amish and Mennonites challenged her views of the world: "*This man [Amish man] was unlike anyone I had ever seen in real life before. He had a full, snow-white beard that mimicked that of Santa Claus but wore a ragged straw hat. His clothes were very clearly homemade and decorated with patchwork from years of wear and tear. Despite his abnormal appearance, after talking to him for a few minutes, he sounded like any other farmer I had ever talked to. He spoke a lot about the weather and this year's hay and corn crops...*"

As students spent more time in the Amish and Mennonite communities, students' comfort levels increased. Students had a chance to visit with the Amish and Mennonite community members about their businesses, which was considered valuable by the students. One student clearly articulated,

"I felt a state of shock and awe when we first stopped at one of the farms ... I previously believed the Amish lived a very dull and excluded life. I thought that they were stuck in this lifestyle because they didn't know any better. What I realized is that I didn't know any better."

Comparison with common life instances allowed for understanding by the students as witnessed by the participant observer. Although numerous fields were passed where GPS-guided combines and tractors worked side-by-side, the dichotomy that exists in agriculture was accentuated during the Amish and Mennonite tour, according to observations. "*I am immersed in technology every day by using cell phones, cars, computers, satellite TV, etc., so to see those families functioning just fine, if not better than I do, without technology was eye opening.*" Some students saw the advantages to being self-sufficient but knew they would choose to use technology if given a choice.

Experiencing the different cultures was often focal points of the student reflections. The culture that emerges after devastation to an area is not easily

duplicated unless tragedy strikes. Students did not want people to experience destruction but realized that life can go on despite daunting circumstances as viewed by the participant observer.

Furthermore, according to an observer, interacting with people who are very committed to their beliefs and who make conscious choices to abstain from practices considered normal by the majority of people in society gave students the chance for deep thought about the essentials of life. "*Visiting the Amish definitely showed me that I have to embrace the differences of another culture, religion and lifestyle.*"

Barriers/Risks

The students on this trip battled the barriers and ideas that confronted them before and during the application process. However, during the experience, several students changed their minds. One said, "*I went into this trip not really knowing what to expect but was completely blown away by what I was exposed to.*" The participant observers observed that students risked venturing into uncomfortable territory and culture during the experience. Students feared the unknown, failure and traveling with people they did not know, yet one student was "*very eager to explore [a] part of the U.S. that I have never been to,*" which was believed to be worth the risk.

"Deciding on attending the trip, I admit, I was scatter brained, unorganized and very last minute on making my decision. Little did I know that the places, the people, the sights, the history and the passions, the difference and similarities of each facet would not only give a piece of themselves, but also take a piece of me with them."

Each student risked leaving Texas A&M University's familiar surroundings and a week of class to participate in unfamiliar situations. Throughout the experience students broke their barriers and learned "that it is fun to try and experience new things."

Professionalism

While in Indianapolis, students recognized the benefit and importance of group dynamics. One student said in her reflection "*We were able to joke with each other, encourage one another and still get work done at the same time.*" Students learned the importance of communication and co-existing with their peers as they explored and volunteered at the National FFA Convention. Students were held to a high standard with great expectations. One student stated her appreciation for the knowledge she gained from volunteering with a CDE.

"I learned about professionalism and how to handle somewhat high-stress situations." Additionally, students developed professional viewpoints by witnessing the

destruction in Joplin, Missouri. “*Touring the wreckage and visiting with the people who were affected by the tornado was by far the most relative real-world experience [Joplin].*”

Career

This field experience provided several opportunities for students to discover a variety of careers, meet potential employers at the National FFA Career Show and open students’ eyes to the agricultural industry. One student claimed, “*I learned so much about agribusiness by touring the John Deere headquarters and the Budweiser Clydesdale breeding farm and definitely saw some future employment opportunities in both of those locations.*” Whereas, another student made it her goal to “meet with employers and ask their opinions on my [her] career focused goals.”

Additionally, students realized that they gained specific career experience and ideas. For example, one student wrote in her reflection that

“*Stopping in Joplin allowed us the opportunity to take “news story” type photos and get hands-on, on-the-scene interview experience with the residents. As a journalism student, it was admittedly a little disappointing to see how the media has backed away from covering this [Joplin] tragedy.*”

After the National FFA Convention, a student reflected that she now has “an idea of what career I would like to pursue.” Because of the connections and networks established during this field experience, one student accepted a summer internship, one accepted a full-time position in Texas and another student’s layout and story from the experience was accepted for publication in Drive magazine.

Desire to Know

The final theme discovered in the reflections and observed on the trip was the students desire to know. The term know in this theme is defined as students seeking life direction, personal growth, inquired concepts and ideas experienced and immersion to increase awareness. One student reflected, “*I think that it is important for students to have high impact experiences outside of the classroom to supplement material learned in the classroom.*” Students believed the trip “sparked their interest in learning” and provided them the opportunity to “*form my [their] own opinions... and see with my [their] own eyes something that the majority of the people in this world will never get to see.*” Through seeking greater knowledge, students grew personally and made connections to previous knowledge and experience as witnessed by a participant observer. For example, after visiting the Gateway Arch, one student noted,

“*I have always been a huge history person, so hearing about the history in the creation of this national landmark, how they built it and the purpose of it symbolized the ‘gateway to the west.’ On top of all of the history that I was soaking up, the one time a year that the men who built the arch came to the monument was the day we were there. That was definitely an experience I will never get again. Hearing the stories of how they built this structure was unbelievable.*”

Further, when reflecting about Joplin, one student wrote, “*One individual said that the tornado hit at 5:22 on 5/22. It makes you wonder if the time was coincidence or if it is planned by a higher power,*” while another student wrote, “*Seeing their [Joplin residents] loss makes me wonder what it would be like if I had to deal with that situation today.*” Additionally, several students made note of the Amish’s education system. One student wrote,

“*I found myself frustrated when learning about their [Amish] education system... I realize that perhaps we are impoverished on the simplicity and innocence that technology, media and our environment takes away from us. I was completely out of my comfort zone.*”

As the Amish men explained their view of education, astonishment was evident in the students’ faces. The students could not believe that most Amish young people were married, would never see a high school classroom or live the college dream and did not have the latest iPhone, which made students question their own lifestyle and how they view the perfect life.

After the experience, students claimed the opportunity was one of the best college experiences.

“*... Our presence at the National FFA Convention was helpful to the facilitators, but our journey up there was the most beneficial trip I have been on. I learned more in that one week than I have in a semester long class... . College students go through many experiences that mean nothing and many experiences that change not only the way you think about something but also changes you as a person. That is exactly what this experience did to me.*”

Discussion

Experiential learning opportunities such as this field experience might be seen as unnecessary, inappropriate learning environments. However, participants believed it was one of the most meaningful learning environments of their college careers because they were able to learn in an actively engaging and emotionally challenging environment with a diverse cohort (Kolb, 1984). The applications revealed that students’ desire to participate in the experience was to learn more about agriculture and to develop personal skills, which were different from the

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trip's outcomes identified in the students' reflections. After analyzing reflections from the experience, we discovered that the desire to know is realized through immersion followed by reflection resulting in high impact learning. Although students' expectations of the trip were to be exposed to agriculture, career opportunities, experience, networking and fun, their experience exceeded their expectations. In their reflections, students expressed seven major themes about their experience: emotion, service, culture, barriers/risks, professionalism, career and desire to know.

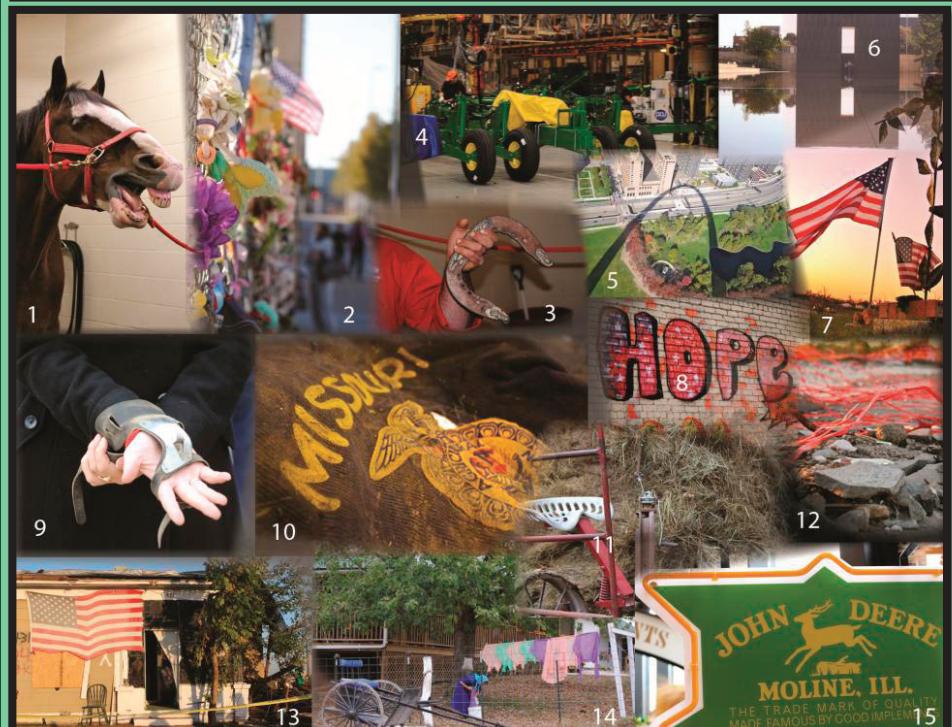
Although Kolb's (1984) model provided guidance for developing this course, expansion of the model's message to integrate Roberts' (2006) model of the experiential learning process could provide a greater depth of understanding for students. Roberts' model incorporates focus, experience, reflection, generalization and the experience again, all in a continuous process. Focus is where students are introduced to subjects the experience may or will present (Roberts, 2006). In preparation for the trip, lectures should be prepared and taught according to the topics and experiences the cohort could and/or will encounter on their trip. Roberts (2006) noted to be sure to "leave room for unplanned, spontaneous learning as a result of the experience" (p. 21). Better preparing students beforehand may have helped the cohort process everything on the trip more thoroughly.

Many of the students who participated in the field experience had no prior knowledge of agriculture in the Midwest and, therefore, had the potential to develop new ideas and opinions about the different types of agricultural practices in the United States. The intended design of the course was such that new ideas and new perspectives of familiar topics would be presented to the students, which supports Kolb's assertion that "learning is relearning" (1984, p. 28). In theory, students could draw from the theoretical concepts, knowledge and skills from previous courses (e.g., reporting, designing, communication, writing, leadership and education) and apply to each of the experiential learning stages as described by Kolb (1984). Inquiring about events witnessed or experienced helps students gain

a deeper understanding and value of a subject while forming their own opinions, according to Kolb (1984). The hope was that new knowledge would arise from students' major-specific projects (designing a three-page layout and story; reestablishing a collegiate FFA program; and developing an agricultural education unit on a topic of their choice) and the experiential learning cycle would continue.

This field experience provided students with an opportunity to be self-directed learners (Knowles et al., 2005) and test new knowledge gained through the experiential learning cycle (Kolb, 1984). By interacting with different cultures and forming relationships with natives, professionals and fellow participants (Joplin, 1981), students had the opportunity to have a greater experience and immerse themselves into a deeper level of understanding and learning. Students learned the importance of communication and co-existing with their peers as they explored and volunteered at the National FFA Convention, which Kolb (1984) noted as an important part of the experiential learning process. As students were exposed to concrete learning environments, they engaged in a deeper thought process (Joplin, 1981; Townsend and Briers, 1990) that often provoked emotions and feelings toward the experience. When students first saw the tornado ravaged community of Joplin, they were in awe. They had never before seen

Figure 1. Collage of student pictures taken during the field experience.



1 = Warm Springs Ranch Stud; 2 = Oklahoma City Bombing Memorial Wall; 3 = Draft Horseshoe; 4 = John Deere Seeder Facility; 5 = St. Louis Arch; 6 = Oklahoma City Bombing Memorial Reflection Pool; 7 = Joplin, Missouri; 8 = Wall of Hope; 9 = Corn Husker, Amish community; 10 = Joplin FFA Jacket; 11 = Fore Cart and Hay Bale; 12 = Rubble left from Joplin Tornado; 13 = Home of a Joplin survivor; 14 = Amish Clothing Line; 15 = John Deere World Headquarters.

such destruction and ruins. One student compared the sight to war while others could not understand living without electricity for five months. Students, some more than others, left Joplin with a different outlook on life.

Students viewed the field experience as an eye-opening, applicable, real-world and challenging opportunity to learn. *“Touring the wreckage and visiting with the people who were affected by the tornado was by far the most relative real-world experience [Joplin],”* which supports Kolb’s (1984) notion that real-world experiences develop students’ minds and prepare them for their career field. In the current job market it is difficult for students to capitalize on job opportunities without previous application of theoretical and conceptual paradigms within their profession. This field experience provided students with the opportunity to apply theories and concepts that would lead to future opportunities—publications, internships and full-time positions. The field experience course was designed to incorporate elements that promoted active learning and application at various points throughout the experience. One student reflected, *“I think that it is important for students to have high impact experiences outside of the classroom to supplement material learned in the classroom,”* which was the purpose of the field experience.

Furthermore, students reflected on the experience in their minds and their journals, which Boud et al. (1985a) and Kolb (1984) stated as an important part of experiential learning. Reflecting on feelings, senses and knowledge during the experience (Kolb, 1984) improves students’ communication and critical thinking skills (Mabie and Baker, 1996). Roberts’ (2006) model emphasized the importance of reflection and generalization after the experience. Reflection provides students more opportunities to have deeper, personal journals. This high impact field experience encouraged students to embrace their education and take it to the next level through developing as an individual, inquiring the unknown or misunderstood and immersing themselves into each environment entered. However, future studies should incorporate formal reflection groups to encourage reflection each day. Debriefing daily activities will ensure that students are learning, not simply having a vacation from the classroom (Baker and Robinson, 2011). Additionally, determining students’ learning styles beforehand may contribute to the organization of reflection groups. When accessing the generalization portion of Roberts’ model, reflections guided by prompted questions may expand student learning in various contexts.

The observations in this study occurred during one semester in a particular setting with a specific group; therefore, the findings cannot be generalized beyond

the cohort. The long-term impact of this particular field experience on the cohort is not yet evident and is not likely to be documented. In-depth investigations of these types of experiences should be documented and could result in a greater understanding of one of the many impacts thought to be associated with experiential learning in agricultural education. As educators, it is important to look at opportunities to incorporate both small- and large-scale field experiences into course curriculum. However, it is necessary to use care when incorporating such experiences because each cohort may react differently to the same setting.

The emphasis for study abroad programs is evident at many universities and, in some cases, overshadows the unique experiences that could occur during a study away. Educators must not overlook the opportunities for high-impact learning to occur within the bounds of the United States. Also, it is possible that students, who may feel uncomfortable leaving their normal surroundings for an overseas destination, may be more inclined to participate in study abroad experiences once they have participated in a study away experience.

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Competencies Needed by Graduates of Agricultural Communications in Mali: Implications for Developing Countries

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Abstract

Competencies needed by agricultural communications graduates to meet the needs of the agricultural sector are key factors for promoting agriculture and food security in a developing country such as Mali. Several studies have been conducted about agricultural communications curricula in North American higher education institutions but few findings exist that describe African universities. The aim of this study was to fill that gap and provide a basis on which policymakers and educational leaders could establish agricultural communications as a field of study at universities in the Republic of Mali and in similar developing countries. This study was done to determine the coursework and competencies required in preparing agricultural communications undergraduates in Mali. Using the Borich (1980) needs assessment approach, the construct with the highest Mean Weighted Discrepancy Score (MWDS), which indicated the most important area for curriculum development for an agricultural communications program, was "Layout and editing." In contrast, "Malian agriculture" was rated the least important area for curriculum development. Based on the findings of this study, a curriculum of agricultural communications for universities in Mali should be developed in six areas: layout and editing, broadcasting, ethics, knowledge of agriculture, use of technologies, and writing.

Introduction/Conceptual Framework

The Republic of Mali is a landlocked country in West Africa. Agriculture is the backbone of Mali's economy (Central Intelligence Agency [CIA], 2013). The Food and Agriculture Organization (FAO) (2011) reported Mali remains one of the poorest countries in the world. However, since 1992, the country has made

administrative, political and economic advances. At the political level, Mali changed from a dictatorial military regime to a successful democracy. Mali is undergoing significant economic reform currently, which is showing progress by increasing economic growth. Reforms in agriculture, food security, environment and education are also ongoing (Government of the Republic of Mali, 2013; USAID, 2003).

Of note, Mali underwent a military *coup d'état* in March of 2012 (Nossiter, 2012). Thereafter, significant military conflict occurred in the Northern regions primarily involving separatist Tuareg rebels and Islamic Jihadists (Leymarie, 2012). In January of 2013, military forces of France and several African countries entered Mali to assist its government with ending the conflict and reestablishing peace and stability (Hirsch, 2013). These events notwithstanding, Mali's agricultural sector and its citizens still stand to benefit significantly from a well-prepared and professional cohort of agricultural communicators, as implied by this study.

The economic development of Mali is strongly dependent on agriculture, which constitutes the most important contributor to the country's gross domestic product (GDP) (CIA, 2013). Agriculture engages more than 80% of Mali's labor force; despite its vital role, however, agriculture in Mali remains poorly developed (CIA, 2013). Millions of rural Malians are vulnerable to severe poverty, hunger and food insecurity (CIA, 2013). The government recently passed legislation to promote agriculture in the framework of a poverty reduction strategy. This legislation includes investment in the agricultural sector, training of human capital, communications and community-based development programs (Ministère de l'Agriculture, 2013). However,

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formal preparation of agricultural communicators in Mali is nearly non-existent (Ouedraogo, 2008).

By contrast, agricultural communications (AGCM) is an essential education unit in many land-grant universities in the United States (Boone, et al., 2000). The Morrill Act of 1862 established the land-grant institutions in the United States (Herren and Edwards, 2002). The mission of land-grant universities encompasses teaching, research and extension to promote and advance the agricultural sector and this is due to the enduring impacts of the Morrill Act of 1862, the Hatch Act of 1887 and the Smith-Lever Act of 1914 (Herren and Edwards, 2002). These institutions of higher education aimed to provide individuals with access to higher education, regardless of a person's wealth or social status, by educating and training professionals for careers in the agricultural sector (Herren and Edwards, 2002).

In the United States, prior to the advent of agricultural communications, farmers received information solely by word of mouth (Boone et al., 2000). Boone et al. (2000) wrote that the first publications on agriculture appearing in the United States originated from Europe. The first American agricultural periodical, titled "The Agricultural Museum," was published in 1811 (Boone et al., 2000). The United States Congress published its first agriculture-related information in 1828 (Boone et al., 2000).

Tucker et al. (2003) asserted that the early professionals who pioneered agricultural communications were not only outspoken leaders within the new profession but were also national leaders of agriculture. Burnett and Tucker (1990) described that, in the 1900s, the agricultural communications craft evolved into a highly competitive industry requiring the knowledge of business and journalistic skills as well as farming. In 1983, Kearn stated agricultural communications had been a professional field in the United States for about 100 years.

In addition, early agricultural communicators worked to change the stereotypical image of agriculture by using public relations (Kearn, 1983). However, despite the growing changes in communications methods through word of mouth, courses in agricultural communications in the United States were not offered before the early 1900s (Buck and Paulson, 1995). Agricultural communications developed when scientists needed help in responding to questions and information requests from agricultural producers (Kearn, 1983).

Duncan (1957) indicated that the first courses of agricultural communications were offered at Iowa State University. Newly opened schools of journalism at some universities offered agricultural communications courses by journalists from the private media sector (Tucker et al., 2003). Agricultural communications

programs have continued to train professionals for communications and journalism careers and agricultural education departments typically host these programs (Reisner, 1990; Weckman, et al, 2000). Moreover, Cartmell and Evans (2013) concluded that agricultural communications curriculum should include learning experiences for students to master journalistic skills such as writing, broadcasting and reporting.

Agricultural communications programs continue to attract a relatively small but steady number of students interested in this field (Cooper and Bowen, 1989; Doerfert and Cepica, 1991; Wargo, 1993). Reisner (1990) stated that undergraduate degrees in agricultural journalism and agricultural communications were conferred at 26 universities across the United States in 1988. Doerfert and Cepica (1991) reported that more than 30 agricultural communications programs existed in the United States in the early 1990s. USDA (2011) reported that 1,500 students were pursuing agricultural communications degree-programs in land-grant universities in the United States. Among them, 130 students were seeking graduate degrees. Terry and Bailey-Evans (1995) found agricultural communications programs continued to emerge while both agriculture and new technologies were advancing. Today, more than 45 U.S. colleges and universities are offering agricultural communications/journalism programs (Cartmell and Evans, 2013).

Numerous Malian farmers are illiterate, yet they desperately need information and communication to organize, manage and market their enterprises (Ouedraogo, 2008). Despite the important role of agriculture in the economy (CIA, 2013), Mali does not have agricultural communications programs in its higher education institutions (Ouedraogo, 2008). According to Ouedraogo (2008), the lack of training of agricultural communicators in Mali results not only in the poor quality of media services to this sector but also a dearth of innovation in media programs for the same.

Agunga (1993) defined six major roles that communicators have to play in the developing world: advising governments on communication policy; assisting project managers in designing and implementing communication strategies; mobilizing and training community groups and individuals for participatory decision-making; training extension workers in communication skills; promoting coordination and linkages among development agencies; and producing of multimedia and audiovisual aids. Leaders of agricultural schools in higher education in Mali need to develop a curriculum appropriate for AGCM that meets the needs of and offers job opportunities to their graduates (Ouedraogo, 2008). Sprecker and Rudd (1997) asserted that determining the competencies needed by agricultural communicators

would help faculty design curriculum enabling graduates to be competitive in the market place and successful in their chosen careers. In addition, Cartmell and Evans (2013) recommended involving all partners in the teaching and development of curriculum, i.e., agricultural communications students, faculty, researchers and communication practitioners.

This study was based conceptually on the Human Capital Theory (HCT). Sampson (2001) defined HCT as an investment in people. van Loo and Rocco (2004) stated that the development of human capital “is an . . . investment in [the] skills and knowledge” (p. 99) needed by individuals such that they can contribute to society. This investment is used to build the capacity of employees with the expectation of increasing their productivity (van Loo and Rocco, 2004). Proponents of HCT maintain that education and training are the most valuable investments to make in people (Cornachione and Daugherty, 2008). “*Human resource development is the process of increasing the knowledge, the skills and the capacities of all people in a society*” (as cited in Cornachione and Daugherty, 2008, p. 17). Smith (2010) posited it is important to assist individuals in acquiring skills that are “sector specific, i.e., sector-specific human capital” (p. 42) to prepare people for specific jobs. Sweetland (1996) indicated human capital studies can be understood as three major methodological approaches, i.e., the production function approach, the measurement of return approach and the aggregate accounting approach. This study of how to prepare human capital in AGCM for the Republic of Mali exemplifies the “production function approach,” as described by Sweetland (1996, p. 353).

Purpose and Objectives of the Study

The study’s purpose was to determine the competencies needed by university graduates for employment in the AGCM sector of Mali, as perceived by media professionals. Two objectives guided this study:

1. Describe the personal and professional characteristics of media professionals in Mali;
2. Determine the competencies needed by university graduates of AGCM in Mali.

Materials and Methods

The study’s target population was media professionals in Mali. The researchers used the snowball sampling technique. In snowball sampling, the researcher asks respondents to identify others possessing the necessary attributes to become part of the sample (Creswell, 2008). The study’s online questionnaire was sent by electronic mail to a list of 27 media professionals who were asked to complete the questionnaire and forward it to their

journalist colleagues. Any journalist who completed the instrument became a part of the sample.

A panel of experts, consisting of five faculty members in the Department of Agricultural Education, Communications and Leadership at Oklahoma State University, reviewed the instrument for content and construct validity. The questionnaire was reviewed and modified according to the comments and suggestions made by the panel of experts. A pilot test was not conducted because of time constraints. However, a post hoc test was conducted to establish reliability of the instrument. The researchers calculated Cronbach’s alphas for the eight constructs (Table 1) and achieved an overall Cronbach’s alpha of .80. The Oklahoma State University Institutional Review Board approved the study’s protocol and all participants provided written informed consent prior to participation in the study.

The questionnaire included eight constructs consisting of seven items each. Media professionals rated their levels of importance and competence for the items. The scale included five anchors: “none,” “low,” “moderate,” “high,” and “very high.” An overall mean score was calculated for each skill construct. The Borich (1980) needs assessment model was employed to analyze the importance and competence skill constructs. This model determines the existence of discrepancies (Borich, 1980). First, a discrepancy score for each of the eight skill constructs was calculated by subtracting the mean importance rating from the mean competence rating. Then, a weighted discrepancy score was calculated for each of the skill constructs by multiplying the discrepancy score by the mean importance rating for each skill construct. Finally, a mean weighted discrepancy score (MWDS) was calculated for each skill construct by dividing the sum of the weighted discrepancy scores by the number of participants in the study (n=26). According to Borich (1980), the purpose of ranking of the constructs based on the MWDS was to determine which curricular areas were the most important for development and teaching; in this case, in university-level AGCM programs in Mali. Waters and Haskell (1989) stated the Borich model has the merit of adding validity to the process of assessing a program’s or content area’s participants’ perceptions regarding the importance of educational and training needs.

Results

Objective one sought to determine the personal characteristics of media specialists in Mali (Table 2). More than one-half (57.7%) of the media professionals in this study were mid-career and in the age range of 36 to 45; a large majority (73.1%) were male. More than one-half (61.5%) of the participants held a master’s degree. The

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Table 1. Cronbach's Alpha by Construct Regarding the Level of Competence and Importance

Constructs	Cronbach's Alpha	Level of Competence	Level of Importance
Malian Agriculture	.921	.908	
Agriculture	.930	.915	
General Communication	.794	.920	
Layout and Editing	.925	.948	
Writing	.934	.937	
Broadcasting	.885	.882	
Technology	.920	.935	
Ethics	.961	.962	

Table 2. Personal Characteristics of Media Specialists in Mali (n=26)

Variables	f	%	M
Sex			
Male	19	73.1	
Female	7	26.9	
Age			
18 to 25	1	3.8	
26 to 35	7	26.9	
36 to 45	15	57.7	
46 to 55	3	11.5	
Type of Academic Degree			
High School Diploma	1	3.8	
Bachelor's Degree	7	26.9	
Master's Degree	16	61.5	
Doctoral Degree	1	3.8	
Others	1	3.8	
Number of full-time journalistic jobs held			2.33
1	3	11.5	
2	7	26.9	
3	3	11.5	
4	5	19.2	
5	2	7.7	
More than 5	5	3.8	
Number of years of experience as a journalist			4.92

average professional experience for the study's participants was almost five years ($M=4.92$) (Table 2) and the average number of full-time journalistic jobs held by the participants was slightly more than two ($M=2.33$) (see Table 2). More than one-half (57.7%) of the respondents perceived their knowledge of the agriculture, food, fiber and natural resources industry as "good." None of the journalists chose "excellent" as a response. Nearly one-half (46.2%) of the participants completed at least three courses related to agriculture during their formal education. The same percentage (46.2%) of participants could speak at least three languages and almost all participants (96.2%) agreed that a journalist in Mali should speak multiple languages to be successful (Table 3).

Objective two sought to determine the competencies needed by university graduates of AGCM in Mali, as perceived by the media professionals. The constructs were ranked from the highest to the lowest based on the MWDS (Borich, 1980). Constructs with higher scores indicated those competencies were most in need of curriculum development for agricultural communications programs at the university level in Mali. Layout and editing had the highest score (MWDS=3.09) and the lowest MWDS was for Malian agriculture (MWDS=-.155). The other constructs ranked as follows:

broadcasting (MWDS =1.95); ethics (MWDS=1.57); knowledge of agriculture (MWDS=1.52); technology (MWDS=1.13); writing (MWDS=1.10); and general communications (MWDS=.95) (Table 4).

Summary

Programs such as agricultural communications, if established in one or more universities in Mali, would not only improve the relationships between researchers and consumers of research, such as Mali's agricultural producers, but also would inform, educate and entertain, both rural and non-rural Malians, especially if focused on radio broadcasting because of Mali's low rate of literacy. According to the African Farm Radio Research Initiative (AFFRI, 2011), due to high illiteracy and poverty, numerous people in rural areas relied on radio mainly to get their news and information. In most cases, only decision-makers and the elites in major African cities have the privilege of receiving their news from television and print (AFFRI, 2011). Moreover, according to Kerr et al. (2007), in sub-Saharan countries, television is limited mostly to urban centers.

Table 3. Knowledge of Agriculture, Courses Completed In Agriculture and Number of Languages Spoken (n=26)

Variables	f	%
Knowledge of Agriculture		
Good	15	57.7
Poor	9	34.6
Courses Completed In Agriculture		
2	7	26.9
3	12	46.2
4	1	3.8
5	1	3.8
More than 5	3	11.5
Number of Languages Spoken		
2	7	26.9
3	12	46.2
4	1	3.8
5	1	3.8
More than 5	3	11.5
Journalist in Mali should speak multiple languages to be successful		
	25	96.2

Table 4. Mean Weighed Discrepancy Score for the Study's Constructs (n=26)

Constructs ¹	MWDS ²
Layout and Editing	3.09
Broadcasting	1.95
Ethics	1.57
Knowledge of Agriculture	1.52
Technology	1.13
Writing	1.10
General Communications	.95
Malian Agriculture	-.155

¹Knowledge of agriculture refers to the understanding of the global context of agriculture, i.e., international food and agricultural systems, global agricultural and natural resources issues.

²Malian agriculture refers to the understanding of the context of agriculture in Mali, i.e., Mali's food and agricultural systems, the country's agricultural potentials and strategies, and extension services.

²Note: Scale: 0=None, 1=Low, 2=Moderate, 3=High, 4=Very High

This study generated information on potential priority areas in agricultural communications from which an appropriate university curriculum could be developed. The study's findings indicated that emphasis should be placed on the areas of layout and editing, broadcasting, technology and ethics in particular (see Table 4). Previous researchers (Doerfert and Miller, 2006) supported the inclusion of writing, editing and technology in the curriculum for undergraduate students who study agricultural communications.

Overall, the findings of this study informed the researchers on the important agricultural communications curriculum areas to be emphasized in Mali. However, more information about this phenomenon may have been discovered if time in the field and involvement with more participants, such as representatives of farmers' organizations and governmental and non-governmental agencies, had occurred. For example, researchers could collect this qualitative data through personal interviews and focus group discussions. It is recommended that the findings of this study be used as a starting point from which to develop a program of study supporting a department of agricultural communications or a special program in a school of journalism in Mali; but, additional input should be sought from other stakeholders, e.g., farmers, providers of agricultural inputs and government officials.

Conclusions

Preparation for careers in AGCM should include a solid collegiate experience and professional preparation (Boone et al., 2000). However, this will require investments in higher education and human capital development (Sweetland, 1996), including faculty members, to prepare highly qualified agricultural communicators to serve the growing agricultural sector in Mali.

A university education is a new phenomenon in Mali. The first university in Mali opened its doors in 1995, i.e., the University of Mali (Ministère de l'Enseignement Supérieur et de la Recherche Scientifique, 2011). The Malian government should consider the passage of legislation similar to the Morrill Act of 1862 (Herren and Edwards, 2002), which led to the establishment of a land-grant university in every state to serve the needs of the common people and to teach practical skills resonating with the U.S. economy. The U.S. land-grant institutions promote research, provide instruction and extend outreach and service (Herren and Edwards, 2002); such a model should be considered by developing countries. To this point, Arnold Toynbee, a distinguished British historian asserted that, "the land-grant idea is the one original contribution of American higher education" (as cited in Bonnen, 1998, p. 4) to the landscape of academia worldwide.

The newly created University of Ségou in Mali comprises four colleges, including a college of agriculture and animal science that has the mission to promote agricultural productivity in the region of Ségou in particular and to Mali in general (Ministère de l'Enseignement Supérieur et de la Recherche Scientifique, 2011). The college of agriculture and animal science is the only one that is operational at the University of Ségou currently due to its important role in the economy of the Ségou region. Ségou is the "breadbasket" region of Mali (Office du Niger, 2005) and provides much of the country's food sustenance needs. Therefore, it is recommended that this college be an educational "pioneer" by founding the first department of agricultural communications in Mali to train professional agricultural communicators to meet the communication needs of the nation's agricultural sector and its people.

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Long Term Knowledge from Short Term Study Abroad in Brazil and South Africa: Facilitating Effective International Experiences

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Abstract

We organized and facilitated two short-term study abroad programs to Brazil and South Africa. The objective of this report is to reflect upon our international experiences, assess our approach to study abroad and encourage others to undertake future study abroad tours. We believe that participant preparation is important to making the most out of these short study tours. Although the time spent in-country is limited to twelve days, we leveraged the knowledge gained and the cultural experience by providing a semester-long course. This course addressed three important objectives: (1) academic preparation through student peer-reviewed presentations, (2) anxiety reduction through travel skill preparation and (3) team building exercises. While overseas, we utilized student leaders, who provided enormous assistance in logistics, making other students comfortable and bringing issues to our attention. We also made ourselves present as often as possible, in the attempt to bring a positive attitude towards all events and circumstances, as well as try to provide context and experience to the study tour experience. Students were encouraged to keep a journal during our travels. After arrival back home, students were required to write a paper that summarized and synthesized what they learned.

Introduction

International programs continue to expand in our increasingly globalized world, yet represent only 9.1 percent of all U.S. undergraduates (IIE, 2012). During the period 1994-2011, study abroad programs experienced growth and short-term programs grew faster than long-term programs. The total number of undergraduates

who went on a short-term (less than eight weeks) study abroad programs in 2010/2011 was 137,389 compared to 99,081 students in longer term study abroad programs during that year (IIE, 2012). Kolb (1984) defined experiential learning as, “*The process whereby knowledge is created through the transformation of experience. Knowledge results from the combination of grasping and transforming experience*” (p. 41). Based on this definition, we believe that short-term study abroad provides an outstanding form of experiential learning.

Short-term study abroad programs can provide a truly positive experience when planned and executed in a deliberate and thoughtful fashion. Bandura (1986) emphasized the idea of self-efficacy, or an individual’s confidence in his or her ability to negotiate the challenges inherent in the larger world. Bandura found that learning by doing is one of the most powerful ways that students acquire new knowledge and master skill development. We believe that staying connected to students as they experience international travel and a new culture provides a safe, powerful learning environment that cannot be duplicated in a traditional classroom setting.

Chieffo and Griffiths (2004) concluded that, “*... short term programs, even as short as one month, are worthwhile educational endeavors that have significant self-perceived impacts on students intellectual and personal lives*” (p. 174) and students who studied abroad were more confident in their levels of intercultural awareness and factual knowledge than their peers who remained on campus (p. 675). Although the time overseas was brief, preparation and assessment were rigorous, involved and occurred over a five-month

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period. The objective of this report is to reflect upon our international experiences, assess our approach to study abroad and encourage others to undertake future study abroad tours.

Methods

We planned, organized and implemented two short-term study abroad courses in the Department of Agricultural Economics at Kansas State University. In January 2012, we traveled with 28 College of Agriculture students to Brazil and in January 2013 we visited South Africa with 18 students. Both study tours were twelve days long and provided meaningful experiences for all participants, including students, faculty and one parent who joined us in Brazil. Details of these two programs are provided in the Appendix. We have been inspired and motivated to continue to offer short-term study tour courses and travel experiences for interested students. Our objective was to make the international travel experience as meaningful as possible for each participant. We believe that the care and effort put into planning and study result in beneficial outcomes and profound international tours.

Many faculty with short-term study abroad experience believe that these programs can provide the opportunity for worthwhile international experiences (Mills et al., 2010; Donnelly-Smith, 2009; Gordon et al., 2009; Long et al., 2010; and McMurtrie, 2009). Mills et al., (2010) summarized previous research with four determinants of the growth in short-term study abroad programs: (1) the need for student preparation for our global work environment, (2) a necessity for skill development for the increasingly multicultural U.S. work environment, (3) desire among universities to meet growing interest in study abroad among traditional, non-traditional and first generation college students and (4) to connect international experiences gained through study abroad programs with marketable job skills. Given these positive attributes of short term study abroad programs, we set out to provide the best possible experience to agricultural students when going overseas, many for the first time.

We selected countries, agricultural visits and experiences that would be most appropriate for our group of college students, most from farms and ranches in rural areas. Brazil and South Africa are nations that most of the students enrolled in the study tours would not venture to on their own. The destinations were selected based on impact on learning about agriculture and people, culture and places much different from our own. Because of the language, culture and location differences, we believe that strong preparation was important to the study tours.

Gordon (2009) charged faculty to provide “a careful balance between recreation and learning” (p. 134). We worked closely with an external, third party tour operator to design study tours that we believed would provide the greatest learning experiences (Figures 1 and 2). The short term study tours were relatively expensive (Figures 1 and 2), but costs were reduced with scholarships. The College of Agriculture provided enrolled students with USD500 and several students received significant scholarships from the Office of International Programs, based on merit and need.

Preparation: Pre-trip meetings

Previous literature emphasized that given the short time period in the short-term study abroad format, course design and delivery is critical to maintain academic standards, maximize personal growth and emphasize cultural learning (Hoffa, 2007; Long et al., 2010, Mills et al., 2010). Donnelly-Smith (2009) reported, “*Faculty members and program directors agree that when working with a short time frame for study abroad, preparation is tantamount for success, both for the students and for the faculty members leading the group*” (p. 13).

Following other study tour programs at Kansas State University, we designed our study abroad program to incorporate pre-trip meetings in the format of an academic class that met once each week during the semester prior to the international tour. This course addressed three important objectives: (1) academic preparation through student peer-reviewed presentations, (2) anxiety reduction through travel skill preparation and (3) team building exercises intended to assist students in getting to know one another. We hosted a dinner at our home for students to learn more about us and interact with each other.

Younes and Asay (2003) prescribed pre-trip meetings for preparation and Doring et al. (2009) and Scoffham and Barnes (2009) recommended engaging students in actively learning about the historical, political and cultural aspects of the country to be visited, as well as the historical interrelationships between nations. To accommodate this, students presented information about the country, including the economy, agriculture, international trade, culture, language and current events during each class session. Roberts and Jones (2009) found that “*By preparing lectures in advance, they can be better prepared to interpret the plethora of data and focus on aspects most important for their learning*” p. 405. These presentations were graded by the other students. The peer review provided solid feedback on both content and delivery. Peer grading provides a solid incentive for each student presentation to be of high quality. We also encouraged students who we

Long Term Knowledge

Figure 1. Faculty Led Study Tour of Brazil Food and Agriculture.

Tour Dates: January 2-11, 2012

Class Dates: Fall 2011, Tuesdays 4:30-5:20 PM, Waters Annex 104

Program Description

AGEC 460, International Food and Agribusiness Study Tour of Brazil. A 10-day intensive Agricultural Economics study tour that will introduce students to the agriculture industry in Brazil, including livestock and crop production and management practices, food markets, agribusinesses, government operations as well as other historical and cultural educational opportunities. The culture and history of the country will also be studied. The course will include preparatory class meetings during the fall semester to acquaint students with the language, commodities, government and geography of the country and locations that will be visited. Prerequisites: Instructor permission. Completion of AGEC 120 or AGEC 121. Minimum GPA 2.5.

Highlights

- ✓ Arable farm, Cattle farm
- ✓ Grain and cotton cooperative
- ✓ Crops research station
- ✓ Ranch with AI and embryo transplant facility
- ✓ Biodiesel plant
- ✓ City tour of Rio de Janeiro
- ✓ Sugar Loaf Mountain and Tijuca Forest
- ✓ Samba show, beach time in Rio
- ✓ Visit to University of Agronomy
- ✓ Coffee plantation
- ✓ Food distribution company
- ✓ FATEC University of Technology
- ✓ JBS World Headquarters
- ✓ Meet with US Trade Representative

Costs

1. \$5696 tour (this includes airfare, hotels, in-country transportation, most meals, entrance fees, insurance, visa fees, contingencies, administrative fees, and tickets)
2. \$333 passport and vaccinations
3. \$688.70 tuition and fees for AGEC 460 (three credits toward ag econ elective).

- There is \$500 financial support available to all students from the College of Agriculture.
- Students may also apply for a travel scholarship of up to \$1000 per student through the Office of International Programs (OIP).

believed would do an outstanding job to make the first presentation, setting a high standard for all students who follow.

Jones and Bjelland (2004) stated that the first step in learning is “preflection,” which they define as “the process of being consciously aware of the expectations associated with the learning experience” (p. 963). The peer-reviewed presentations caused preflection, built rapport among the students and formed the basis of a “pre-departure report” written by each student that summarized what they had learned about the nation, including agriculture, trade, economy and culture. Preflection occurred as students made presentations, wrote papers and discussed what to expect with other students and faculty leaders. These papers were 10-15 pages long and were universally well done. The cost of the study tour, together with the enthusiasm for the upcoming international travel, provided the motivation for students to put a great deal of time and effort into these papers. We believe that this provides evidence for the powerful nature of a study abroad experience: the excitement of learning becomes explicit and tangible.

Koenig (2007) reported that pre-trip sessions often focus on material on the destination country, but not on reducing student anxiety or team building. Therefore, during each pre-trip class, time was spent identifying student concerns, including group dynamics, the potential for culture shock, homesickness, language issues and fear of the unknown. The term, “culture shock” is often used as an indicator of difficulty experienced while visiting

Figure 2. South Africa: International Food & Agribusiness Study Tour.

Study Tour Dates: January 2-14, 2013

Class Dates: Tuesdays 4:30-5:20 pm, Waters Annex 104. August 21, 2012 to December 11, 2012

Program Description

AGEC 460, International Food and Agribusiness Study Tour of South Africa is a 13-day intensive Agricultural Economics study tour that will introduce students to the agriculture industry in South Africa, including livestock and crop production and management practices, food markets, agribusinesses, government operations, as well as other historical and cultural educational opportunities. The culture and history of the country will also be studied. The course will include preparatory class meetings during the Fall 2012 semester to acquaint students with the language, commodities, government and geography of the country and locations that will be visited. Prerequisites: Instructor permission. Completion of AGEC 120 or AGEC 121. Minimum GPA 2.5.

Highlights

- ✓ Tour Cape Town, the oldest and most attractive city. Travel along the Atlantic coast to the Cape of Good Hope Nature Reserve, which is comprised of 1,200 plant species.
- ✓ Visit Robben Island, a World Heritage Site for its importance as both a cultural and historical shrine and “the world’s most powerful symbol of resistance to oppression”.
- ✓ Check out the V & A Waterfront, with the Victoria Wharf shopping mall, craft markets, a working brewery, and Two Oceans Aquarium.
- ✓ Visit the agriculture school of Mrs. Sabina Khoza, one of South Africa’s top poultry farmers, producing 150,000 birds annually.
- ✓ Travel to the Inyoni Crocodile Estate in Brits, with more than 10,000 crocodiles.
- ✓ View the Loskop Irrigation Scheme, which delivers water to 16,117 hectares of land.
- ✓ Tour the farm of Danie de Beer, called “Wonderboom”, which has corn, soybeans, cows, lions, and rhinos.
- ✓ Visit Kruger National Park, the first national park in South Africa in 1926.
- ✓ Check out the Jane Goodall Institute Chimpanzee Sanctuary.

Costs

- ✓ Program Fees Collected by the Study Abroad Office: \$6,470.00 (includes international airfare, program fees, group meals, gratuities/tips, OIP administration fee, class materials/bank wire/FedEx, emergency fee, and international medical insurance).
- ✓ Additional Anticipated Expenses: \$335 (for expenses such as passport fee, immunizations, and textbooks).
- ✓ Estimated K-State Tuition and Fees for Undergraduate Course: *\$693.60 for one 3 credit hour undergraduate K-State course. \$21.50 Division of Continuing Education Fee.

foreign nations as tourists (Hotella, 2004; Oberg, 1960). We discussed the possibility of culture shock often during the weekly class meetings. An issue related to culture shock is anxiety due to travel. Although every student and faculty member shared some anxiety before the study tour, the fear was discussed by only some of the students, while others remained silent. We used each class meeting to emphasize that we all experience anxiety, but that we would conquer it together.

We also emphasized the unpredictable nature of international travel and how keeping an open mind will provide a more positive experience. The repetition of these ideas each week for an entire semester paid off when the study tour experienced logistical hurdles, or when exhaustion set in: by recalling the pre-trip mantra of being flexible to unexpected changes, students were more able to deal with the frequent changes in plans that arise during travel overseas. We experienced frequent changes in the itinerary during both tours, as the schedule was altered based on timing and availability of our farm and agribusiness hosts. When participants had been warned that this is a common, interesting and fun part of the study abroad experience, they seemed better able to accommodate unexpected changes,

Long et al. (2010) recommended using such pre-trip meetings to build student ownership in the course through teambuilding activities and each class session included a team building activity. Many of these activities are fun and include learning each other’s names and learning

more about the background, interests and expectations of each participant. One activity that was particularly worthwhile was student interviews of each other: we provided a series of questions that students used to ask each other, which started conversations that were often meaningful and led to students becoming friends prior to the study abroad tour. We also invited students to a dinner at our home, to allow them to learn more about our background and lifestyle. This event allows students and faculty to get to know each other in a setting that is more similar to the travel experience than the classroom. We also schedule a dinner at a restaurant to continue the process of getting to know one another.

Use of Student Peer Leaders

Both study tours had student leaders, who helped with the logistics, organization and flow of the study tour experience. We found these leaders to be important components of the international travel experience. The leaders made sure the students were ready to go each morning, that no one was left behind and they took care of a large number of small crises, including headaches, sunburn, group dynamics (interpersonal relations) and a myriad of other small issues. The feedback and interaction between the student leaders and the faculty kept the study tour on track and facilitated providing a safe, positive experience for all participants.

The student leaders for the first tour were selected by the other students in an election process on the first day of class. For the second tour, we were fortunate to have two of the students who traveled to Brazil enroll in the South Africa study tour. These experienced travelers were the obvious choice of student leaders and were invited by us to perform the student leader role. We had leadership meetings for an hour prior to each class meeting, to plan, organize and discuss each weekly meeting. This provides for deeper relationships between the student and faculty leaders, which facilitated our ability to work together while in-country. The student leaders did an outstanding job and there was no compensation for their excellent work.

Faculty Presence during the Study Tour

Daily group meetings were suggested by Younas and Asay (2003) as a strategy for greater learning. Although we did not have formal meetings each day, we made use of constant informal interactions, discussions and small group meetings, particularly during meals and during periods of downtime. Our experience working with college students provided the foundation for significant, meaningful conversations, interactions and, at times, admonitions. Being present for any and all issues that arise allowed us the opportunity to engage, assist and

mentor the study tour participants. This is perhaps the most meaningful aspect of the study tour experience for us as educators. Our emphasis as a teacher and student services professional is to provide students with information and experiences to learn and grow. For each participant, the personal growth was evident for each individual during our time abroad.

Student Journals and Post-Study tour wrap-up

Canfield, et al. (2009) recommended that students keep a personal journal for self-reflection during the study tour. We recommended, but not required, this practice and were pleased that nearly all students kept some sort of journal. Many students wrote by hand, others typed on a tablet or laptop and others took photos and wrote captions. Huesca (2013) found technology to be a hindrance to student experience during study abroad, since students remained in constant communication with their family and friends during a study tour to Africa. We found, however, that the use of phone and tablet cameras to capture and post photos provided a rewarding experience for many students. Keeping a photo journal, or blog, allowed students to review, reflect and digest their experiences. Given our full itinerary and how many destinations we had each day, this provided a good way to keep track of what happened on the study tour.

Although the journals were not required, we did require a final report that summarized and synthesized what each participant learned on the tours. Gardner, et al. (2008) reported that, *“The use of journals, blogs, reflective papers and group discussions permeate some of the best instructional design we have in our collegiate programs”* (p. 6). The journals provided a great source for writing the final paper, allowing students to recall their impressions, thoughts and views on the people, places and locations visited. For example, one student provided a careful description of her thoughts and emotions when we visited a poultry farm in South Africa run by workers who had difficult backgrounds, including prostitution and AIDS. A second student provided a detailed account of his first urban experience in Sao Paulo, Brazil.

Post study tour reflection papers were recommended by Long et al. (2010) and were assigned after both the Brazil and South Africa study tours. Gardner et al. (2008) stated that, *“Ideally, study abroad programs integrate experiential pedagogy with purposeful reflection to capitalize on the unique cultural learning laboratory in country. Reflective learning exercises are common among study abroad programs, both structured and unstructured”* (p. 6). The final paper was an open-ended assignment that provided students with a great deal of flexibility to summarize what they had learned.

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For most students, the final papers were well done and meaningful.

Gardner, et al. (2008) reported that post-tour meetings can provide a good practice for reflection, synthesis and integration of ideas and emotions experienced during the study tour. We met for dinner after each study tour, approximately two weeks afterward. These dinners provided a great way of reconnecting with a group of people who have shared an intense and meaningful experience together. We also had students complete assessment tools for each trip and used student comments to affirm our approach to short term study abroad. Student feedback was primarily about how the itineraries could be improved, but had no suggestions for improvement on the course format.

Marketable Job Skills

Sachau et al. (2010) found that marketable skills associated with study abroad programs can include increased knowledge, shaping attitudes and building confidence. Further, Gardner et al. (2008) asked employers to identify traits that set candidates with study abroad experience apart from others. Some of the most significant traits identified included:

- Interacting with people who hold different interests, values, or perspectives
- Understanding cultural differences in the workplace
- Adapting to situations of change
- Gaining new knowledge from experiences.

As facilitators and observers of student learning during our short-term study abroad, we believe that our students were exposed to multiple experiences which provided them with opportunities for enrichment on many of these traits. Site visits in both Brazil and South Africa were diverse and enabled students to further their knowledge in the areas of global agricultural production and international trade. Informal conversations occurred between members of our group and host-country nationals in both Brazil and South Africa. While some students were more open to these encounters than others, these “unscripted” conversations provided the opportunity for students to gain exposure to perspectives outside of their own.

International travel by its very nature requires adaptability. Students were exposed to changing itineraries, new foods and diverse viewpoints and cultural practices. At times, some participants were tired, homesick or not feeling well. As leaders, we watched students adapt to new experiences and overcome the challenges inherent in traveling. Through this process, and arguably, because of it, we also noticed what we viewed as their increasing confidence as the trips went

on. For example, one student was extremely nervous and withdrawn upon arrival in Johannesburg, but later became more talkative and interactive as he became more comfortable with being overseas.

Beyond merely acquiring marketable skills, Gardner, et al. (2008) further outlined the importance of students being able to articulate the added value of their experience to prospective employers and provides a model for “unpacking” the study abroad experience. Currently at Kansas State University, the Career and Employment Services office, in partnership with the Study Abroad office, offers a similar workshop entitled “Putting Your International Experience to Work” twice yearly. The goal of this workshop is to help returned study abroad students more effectively describe their international experiences on their resume and in interviews. Each workshop involves discussion of possible skills gained, a period of guided reflection and role playing. Attendance at these workshops has been primarily students returning from summer or semester long study abroad experiences. One recommendation to enhance participation of short-term study abroad students would be to partner with faculty leaders, to make the workshops a joint effort.

Conclusion

We organized and facilitated two short-term study abroad programs to Brazil and South Africa. We believe that participant preparation is important to making the most out of these short study tours. We selected challenging destinations that provided many opportunities for students to learn about agriculture and other cultures. We utilized an external tour operator to provide experience and connections that allowed us to take advantage of a wide variety of overseas opportunities. Although the time spent in-country is limited to twelve days, we leveraged the knowledge gained and the cultural experience by providing a semester-long course. This course addressed three important objectives: (1) academic preparation through student peer-reviewed presentations, (2) anxiety reduction through travel skill preparation and (3) team building exercises intended to assist students in getting to know one another. We hosted a dinner at our home for students to learn more about us and interact with each other.

While overseas, we utilized student leaders, who provided enormous assistance in logistics, making other students comfortable and bringing issues to our attention. We also made ourselves present to students as often as possible, in the attempt to bring a positive attitude towards all events and circumstances, as well as try to provide context and experience to the study tour experience. As experienced international travelers, we were able to explain and interpret a great deal of

situations and experiences that our first-time travelers encountered. Students were encouraged to keep a journal during our travels. Journal formats included notes on paper, photo blogs, typed entries on tablets and extended captions on cell phone camera photos.

After arrival back home, students were required to write a paper that summarized and synthesized what they learned. These papers were enjoyable to read and provided anecdotal evidence that the students had learned a great deal about other cultures and about themselves. We had a “post-tour” dinner at a local restaurant and enjoyed getting back together and reflecting on what was for most students a “once-in-a-lifetime” experience. We hope to inspire other faculty members to facilitate similar future study tours.

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