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Poster Abstracts from the 2017 Annual Conference of the Association for International Agricultural and Extension Education

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Poster Abstracts from the 2017 Annual Conference of the Association for International Agricultural and Extension Education
Assessing Future Needs of Extension Educational Programs: Integrative Approach

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Keywords: Extension programs; integrative approach of needs assessment; research-based marketing approach; asset-based approach of needs assessment; market analysis for Extension programming.

Introduction
Assessing community needs is one of the key steps in strengthening Extension educational program planning. The traditional approach to needs assessment, which Extension currently uses, has been criticized since the 1980s because of the following limitations: 1) the assets available for a specific community are not always known nor identified; 2) the needs assessment focuses on the negative aspects of the community; 3) the communities being assessed are always perceived as vulnerable and recipients of benefits; 4) communities perceive themselves as recipients of benefits and do not utilize the available assets to build their communities; instead, communities wait for external support to address identified needs (Altschuld, 2015). The researchers propose an integrative approach to needs assessment that will help to avoid discussed limitations.

Purpose and objective
The purpose of this pilot study is to test an integrative approach to needs assessment that allows the evaluator to assess local community resources/assets and citizen’s needs. A research objective is to identify future demand for Extension programming using an integrative approach of needs assessment (research-based marketing and asset-based needs assessment approach).

Methodology
We offer a two-phased approach; Phase I is a research-based marketing approach, while Phase II is an asset-based approach to needs assessment.

Phase I. Understanding past and current trends is highly important when we plan future Extension programming (Comer, Campbell, Edwards, and Willison, 2006). The philosophy of the marketing approach for Extension involves “‘scanning the environment’ to identify the needs of clientele, target audiences, and match Extension's programs with audience needs” (Raymond, 1987, p.1). The marketing approach focuses on a unique service market segment (i.e., non-formal education) through the comprehensive examination of local community resources, assets, and trends.
**Phase II.** An asset-based needs assessment approach will be used to identify the county’s available assets and needs at the community level. This process builds on the positives of the communities and encourages communities to utilize their assets and not extensively rely on external aid (Altschuld, 2015). Phase II will utilize qualitative and quantitative research strategies. A “Quality of Life” instrument and focus group interview questions are currently being developed.

**Results**
Based on the results of the market analysis (Phase I) for the pilot county, we identified the following possible future Extension programming: 1) workforce development programs for youth in low-income families; 2) assistance with federal, state, and local benefits; 3) assistance with single-parenting issues; 4) chronic disease management; 5) healthy lifestyle practices; 6) challenges in the changing family structure; 7) urban farming; and 8) farm biosecurity. The results of the asset-based needs assessment (Phase II) will help to mobilize the community’s assets, resources, and strengths and provide opportunities to address the identified needs. We plan to complete conducting Phase II of our research in fall 2016.

**Recommendation**
Integrative methodologies in research have been widely accepted for the last decade in the social and behavioral sciences (Creswell, 2014). We are recommending the use of an integrative approach to needs assessment that will complement a traditional Extension needs assessment.

**References**
Assessing the Administrative Value of a Weekly Check-In System for the Evaluation of an Online Training Program

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Introduction and Purpose

Process evaluation—the assessment of program activities—guides program maintenance and improvement efforts (Patton, 2002; Stufflebeam, 2003). Although extensionists have found value in this type of assessment (Baker, Bassey, Jimoh, & Akande, 2015; Duerden & Witt, 2012), it has also been found to be obtrusive due to its frequency (Stufflebeam, 2003).

The Child Health Assessment in the Pacific (CHAP) is an instructional and extension focused program housed in the College of Tropical Agriculture and Human Resources at the University of Hawai‘i at Mānoa. The program provides distance training in child health assessment techniques to undergraduate students from four institutions in the Pacific. As part of the evaluation process, students and faculty mentors (administrators) provided weekly feedback. A summary of the students’ feedback was presented to the administrators at weekly meetings. The purpose of this study was to assess the value of a weekly check-in system by exploring administrators’ weekly feedback responses and the administrative meeting minutes.

Methods

The participants were purposefully selected based on their role as a program administrator in CHAP (Merriam, 2009). There were 11 administrators (A1-A11) in the study. A
content analysis (Patton, 2002) of their weekly feedback responses and the minutes from the seven administrative meetings (M1-M7) were analyzed for reference to the value of the weekly check-in system. Three themes emerged: immediate improvements, improvements for future program iterations, and validation of weekly check-in effectiveness. Trustworthiness was established (Lincoln & Guba, 1985).

Findings
The weekly check-in system allowed administrators to make immediate improvements to program structure. Administrators were able to increase efficiencies and address technical issues (A4-A6, A10-A11). They were also able to keep up with student progress and make improvements to increase student success (M1, M3, M7, A1, A6-A7).

The weekly check-in system also allowed administrators to identify improvements for future program iterations. They explored each program area and identified areas of improvement (M1-M7). Included were altering assignment timing and expectations (M4, M6, A1, A5), changing selection criteria for student participants (A1-A11, M6-M7), and the value of weekly check-ins (M1, M6-M7).

Overall, the administrators identified a validation of weekly check-in effectiveness. Administrators “appreciated the weekly check-in” (A2) and administrator A9 found them to be “a great way to keep mentors on task.” They also acknowledged the students’ commitment to providing weekly feedback, as well (M2, M4).

Conclusions, Recommendations, and Educational Importance
In alignment with the description of process evaluation (Stufflebeam, 2003), program administrators found value with the weekly check-in system. There was concern that check-in frequency would be problematic but administrators found value because it reminded them to communicate with their mentees; increase mentoring efforts, as needed; and allow for programmatic feedback. The weekly check-ins also kept students engaged with the distance program. It is recommended that a weekly check-in system be used as a program’s process evaluation when regular participant engagement is critical to program and participant success. Due to the regional location, the distance format of the course was useful to keep all parties engaged in the 12-week training program.

References
Assimilating Adult Volunteers into Positive Youth Development: A Global Extension of the National 4-H Council's Model

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Introduction & Review of the Literature

Africa is the most youthful continent in the world with about 65% of its total population below the age of 35 (African Union, n.d.). African leaders are concerned about their youthful populations undermining social cohesion and political stability because of a lack of employment opportunities (Ighobor, 2013). Potential volatility and increasing food demand present challenges that must be addressed in order to make progress towards building sustainable food systems. Youth should be prepared to address food shortage and access challenges they will face in the future. Preparation may involve participation in structured activities and experiences that build their developmental assets (National Youth Development Information Center, n.d.; Benson, 2007). 4-H is a global youth organization that uses an intentionally-structured framework to equip youth with knowledge and skills (i.e. assets) to make contributions that will benefit themselves, their families, their communities, and civil society (Lerner, Lerner, & Colleagues, 2013). Adult volunteers are a fundamental component of the 4-H model. They work with youth as partners and co-producers of youth’s development (Benson, 2007).

Purpose & Objectives

The purpose of this poster is to present a theoretical model illustrating how adult 4-H volunteers in Ghana assimilate into the National 4-H Council’s Positive Youth Development (PYD) framework. Three key inputs of the PYD model, collectively called the “4-H Experience,” are posited as fundamental elements needed to achieve desired youth development outcomes and impacts. Therefore, the authors of this poster have hypothesized that adult 4-H volunteers in Ghana need to possess certain competencies that enable them to foster an environment for positive youth development to occur.

Methods

One author collected data through participant observations with the 4-H Ghana program, and conducted a review of relevant literature. Themes emerging from the literature review and observations led to an adaptation of the National 4-H Council’s PYD framework by linking in adult volunteers and
volunteer competencies.

**Conclusions**

Responsibilities are communicated to adult volunteers in Ghana through a 4-H club manual and trainings (4-H Ghana, n.d.). However, volunteers do not have performance expectations against which they can benchmark themselves. Six volunteer competency themes, encompassing a broad range of skills and knowledge, were derived through research (Culp, McKee, & Nestor, 2007) and adopted by the National 4-H Council (n.d.) in the U.S. However, these themes have neither been validated in an African context nor embedded into the PYD framework.

**Implications**

Volunteer competencies define essential knowledge, skills, and abilities needed to achieve PYD outcomes (Schippman et al., 2000). The proposed linkage of adult volunteers and volunteer competencies to the PYD framework will assist 4-H Ghana and the African 4-H Network with identifying, recruiting, and training adult volunteer 4-H advisors. This model can then be used as a conceptual framework for a study to validate a list of competencies for adult 4-H volunteers in Ghana. Volunteers better equipped to deliver the “4-H Experience” guide youth towards strengthening the resilience of fragile food systems, rather than undermining them.

**References**

4-H Ghana. (n.d.) *Club leaders organizational manual.*


Building Capacity of Rural Youth and Extension Workers in Agriculture as a Business: Perspectives from Malawi

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Introduction

Youth unemployment has proven to be a persistent global challenge for both the public and private sector to address. Barriers to extension and agricultural resources for youth continue to pose significant threats to rural employment and to long term agricultural development in Sub-Saharan Africa. In a renewed effort to strengthen the policy environment surrounding rural employment for young people, Malawi’s 2013 Youth Policy report called for “The establishment of community-based skills training programmes for the youths including village polytechnics, business incubation and youth multipurpose skills training centres is promoted;”

Purpose and Objectives

To increase the understanding of the attitudes of rural youth towards agriculture in Malawi and explore practices for addressing youth unemployment, this research examines the effects of agribusiness entrepreneurship training on the business knowledge, entrepreneurial propensity, and expected wages of youth in rural Malawi. The intervention was implemented as a program in the East Lilongwe district, testing the effects of a 10 week agricultural entrepreneurship course to equip youth with the skills necessary to start an agribusiness. The results were measured by a set of surveys that quantify youth attitudes, knowledge, and access to entrepreneurial activity in Central Malawi. A separate assessment also measured changes in agribusiness knowledge in extension workers participating in the entrepreneurship workshop that will be facilitated by Malawi’s Department of Agriculture and the Strengthening Agriculture Nutrition and Extension (SANE) activity.
Methodology

Initial knowledge and attitudes were measured through a baseline survey with approximately 500 participants – 341 men, 159 women. Two pre- and post-surveys were written for this study, one designed for youth participants and the other for Area Extension Development Officers (AEDOs). The surveys were intended to gather both descriptive and inferential data to better inform understanding of youth perceptions and attitudes of agricultural livelihoods as well as test hypotheses and relationships between youths’ agribusiness knowledge and propensity to engage in agricultural employment. Following the baseline survey, AEDOs participated in weekly agribusiness training sessions based on curriculum designed by FAO and the Government of Malawi for 10 weeks. The curriculum was augmented with group building and experiential content modules to engage youth with non-traditional classroom methods. After each session extension workers were directed to visit Young Farmers Clubs in their communities to transfer the knowledge gained during their weekly training session in addition to helping youth develop their business plans.

Results

Though data collection is still taking place, preliminary results indicate that beyond notable knowledge gains, youth who are trained in agribusiness are significantly more likely to desire to pursue employment in rural communities and display higher wage expectations than those who did not receive training. Youth who received training also demonstrated stronger propensities to engage in entrepreneurial agribusiness activity.

Recommendations

It is recommended that governments interested in building the capacity of youth through extension programming should invest in training extension workers to transmit knowledge in formats that are multi-faceted and interactive, with clear post-training opportunities presented to youth to identify market opportunities.
Establishing Training Workshops for Teachers in Ghana

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Introduction/Need

In 2015, AgriCorps Fellows hosted a three-day training workshop on experiential learning for Ghanaian teachers. While working with Ghana Education Services (GES) and local schools in collaboration with 4-H Ghana, the Fellows identified strengths and weaknesses in their Ghanaian teaching partners’ classrooms, which led to offering a workshop on experiential learning methods. Baker, Robinson, and Kolb (2012) asserted “experiential learning curriculum, when designed and executed properly, can have positive effects on both formal and informal assessments” (p. 8) of student learning.

Purpose/Objective

It was expected the participants would learn to create unique, experiential learning environments; employ critical thinking techniques to increase student engagement; practice effective classroom management; and develop student-centered instructional activities.

Methods

The workshop included seven sessions on topics ranging from classroom management to problem-based learning. Primary activities were taken from the USDA, USAID, and University of Wisconsin-Extension produced curriculum, *Cultivating Learning with School Gardens, Training-of-Trainers Manual* (Crave, 2013), as provided to AgriCorps Fellows as a resource. A portion of the training was delivered using agriculture as the learning context. Parr, Edwards, and Leising (2006) reported how agricultural mechanics can be used as a learning context to improve students’ math achievement.

Seventeen participants (15 males, 2 females) from nine schools in two regions of Ghana, including 11 junior high and six primary school teachers, attended the workshop. Most taught mathematics and/or integrated science, i.e., STEM. Five had never before attended a teacher training workshop.

Results
All participants completed pre-/post-workshop questionnaires. Before the workshop started, they were asked about their primary teaching methods: “Discussion” was the most frequent answer (f = 7). Four expressed doing “activity-based teaching.” Three indicated using four methods: “child-centered approach, question and answer, demonstration, and group work.”

The post-workshop assessment reflected that participants had an overall positive experience. When asked for suggestions to improve, they preferred a longer training period. Thirteen indicated the workshop “will help me be a better teacher.” Twelve described the training as giving them “knowledge and skills.” Only one considered the training “average” and none as “poor.”

The most notable testimony for the experiential learning focus was a “learning experiment” conducted on day one. Participants were divided into three groups and taught the same topic – the basics of composting – using different teaching methods: lecture, demonstration, and experiential. The next day they completed a multiple-choice/open-ended question quiz on composting. Results by group were lecture, 78%; demonstration, 85%; and experiential, 98%. Participants reflected on the teaching methods and how each could be improved to include more opportunities for student-centered learning experiences. A handbook of the workshop’s resources was provided to all participants.

Recommendations/Educational Importance

AgriCorps intends to provide similar workshops in the future and seeks to work more closely with GES, Ghana 4-H, and STEM teachers. In 2016, AgriCorps Fellows delivered five workshops to 81 teachers from three regions in Ghana (Clement, 2016). An improved evaluation approach is needed to obtain more data for future enhancement, including follow-up with teachers and assessment of their students’ learning.

References


Evaluating Organizational Climate for International Graduate Students at College of Agricultural Sciences and Natural Resources at Texas Tech University

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Introduction

Organizational climate is generally viewed as a favorable, if not essential, factor for promoting academic achievement (Reynolds, 2006). “It is important to understand how institutions of higher education can help international students to adapt better, both socially and culturally, in new settings” (Wilson, 2011, p.1). The study of organizational climate of graduate students might lead to suggestions of how faculty can change policies, requirements, and expectations that could improve their students’ experiences (Anderson & Swazey, 1998). This is something that should be done periodically to assess students’ experiences in their departments and programs over the time, and make improvements on weaknesses and problems identified (Anderson & Swazey, 1998).

Purpose

The purpose of this study is to describe the organizational climate and leadership practices as perceived by international graduate students with assistantship in the College of Agricultural Sciences and Natural Resources at Texas Tech University and explore the relationship between these two variables.

Methods

A two-part questionnaire by Stringer (2002) was used for data collection. The instrument consisted of two sections. A four point Likert-type scale (1 = definitely disagree, 2 = inclined to disagree, 3 = inclined to agree 4 = definitely agree) regarding Organizational Climate, and a five point Likert-type scale (1 = strongly disagree, 2 = disagree, 3 = neither agree nor disagree, 4 = agree, 5 = strongly agree) regarding leaders’ behaviors. All data was collected through a secure computerized database in Qualtrics®. Data was analyzed using SPSS®.
Results

There were 18 students who completed the questionnaire. The results of the organizational climate constructs compared with the national norm established by Stringer (2002) are as follow: support, responsibility, and standards were high, recognition and structure were moderate, and commitment was low. Figure 1.

![Organizational Climate profile](image)

Figure 1. Organizational Climate profile.

Overall, the leadership construct had a mean score of 4.02 ($SD = .95$). The mean scores per items ranged from [3.47 - 4.59]. The highest leadership behavior was “demonstrates personal commitment to achieving goals” ($M = 4.59$, $SD = .62$), and the lowest was “gives me feedback on how I am doing on my job” ($M = 3.47$, $SD = 1.50$).

A Pearson product-moment correlation was used to determine the relation between the leadership practices and organizational climate. Results showed the constructs of support, commitment, and recognition had a very high significant positive correlation with leadership.

Recommendations

Based on the profile of the assessed organization high levels of structure, responsibility, and commitment are needed. Results showed commitment was low; higher commitment is the result of the other five constructs. Therefore, if recognition and structure are improved we can expect commitment to increase. In order to address the lowest leaders’ behavior, which is related to giving feedback, constructive and positive feedback should be encouraged between supervisor and student to foster open communication and clear expectations. It is recommended to replicate
this study with a larger population and in different universities to explore international student integration in U.S. academia.

References
Food Insecurity in Resettled Communities: Barriers to Community Resilience Among Somali Refugee Populations

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Introduction
Uprooted from their homes, Somali refugees are challenged to develop resilience as they resettle in the United States. Food security has been identified as a major issue: studies have observed that refugees in the U.S. experience food insecurity more than native citizens. In a study conducted by Doron (2005) examining community resilience of Lebanese refugees resettled in Israel, she employs a community resilience model first introduced by Sarig (2001) which identified seven key components of resilience: (1) sense of belonging, (2) control over situations, (3) capacity to apply positive challenges and a sense of proportion to change, (4) maintaining positive perspective, (5) learning relevant skills and techniques, (6) strong values and beliefs, and (7) support systems (Doron, 2005; Sarig, 2001). This research seeks to apply these concepts of community resilience to better understanding food security challenges of Somali refugees resettled in the US.

Purposes
The purpose of this poster is to apply a community resilience framework to examine refugee food security. This theoretical perspective will contribute to research for developing resilience-enhancing programs for refugee food security and community resiliency.

Methodology
A literature review was conducted to identify food security barriers within the Somali refugee community. Information was then analyzed applying concepts of community resilience identified by Sarig (2001).

Results

Belonging
Hagerty (1992) defines a sense of belonging as “the experience of personal involvement in a system or environment so the persons feel themselves to be an integral part of that system or environment” (Hagerty, Lynch-Sauer, Patusky, Bouwsema, & Collier, 1992). Employment opportunities are a major barrier challenging Somali refugees; even those holding advanced degrees have found their employment opportunities limited (Heger Boyle & Ali, 2010; Patil, Hadley, & Nahayo, 2009). This results in an over-representation of Somali refugees in low-paying service jobs increasing household food and financial insecurity.
Control over situations

Newly arrived refugees have little control over their new situation. Patil (2009) identified underlying power dynamics between new refugees and caseworkers, who are typically their primary resource to navigate the local food system. “(O)ften the caseworker has his or her own conceptions of nutrition, economizing, or what is ‘best’ for his client” (Patil et al., 2009). Refugees struggle with food insecurity due to: low knowledge of American foods, limited availability of familiar foods, and food access constraints.

Support systems

Mutual support among community members and strong social networks are critical to household food security. Upon arrival to the US, social and support structures change from a supporting extended family structure to a nuclear family structure (Heger Boyle & Ali, 2010). Non-intact and female-headed families face particular challenges to achieving food security without extended family support for child-care (Heger Boyle & Ali, 2010).

Implications

Using the community resilience framework can provide a new lens for investigating food security for Somali and other refugees resettled in the US. Food security can help build community resilience and vice versa. Further research exploring the experience of refugees is crucial to designing resilience-enhancing interventions.

References


Fostering Cross-Cultural Understanding and Local Research Capacity through a Graduate Student’s Eight-Week Study Abroad Experience in Uganda

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Keywords: capacity building; graduate students; qualitative research

Introduction/Review of Literature
As the world’s labor, capital, and people become more globally integrated (Bell-Rose & Desai, 2005; Myers, 2006), a need exists for individuals to engage in cross-cultural activities designed to build professional capacity. One way to achieve this aim is through facilitating international professional development opportunities that enable participants to gain new knowledge and skills while also sharing their expertise (Cortina, 2010). By engaging in such activities, participants can develop a more complete understanding of local issues, concerns, and inequities while also discovering ways to create change (Cortina, 2010; Gaillard, Krishna, & Waast, 1997; Tuhiwai-Smith, 1999). In this regard, a doctoral candidate from Oklahoma State University delivered a series of qualitative research seminars to both graduate agriculture students and faculty at Gulu University during his eight-week study abroad learning experience in Uganda.

Purpose/Objective
One aim of the experience was to introduce participants to the qualitative research paradigm while also facilitating them in identifying ways the approach could be used to address local issues and problems. The poster presentation’s objective will be to describe the activities a graduate student at Oklahoma State University employed to facilitate cross-cultural learning and local research capacity in Uganda.

Methods
To accomplish the study’s purpose, the graduate student facilitated seminars that allowed participants to examine areas of need while also engaging in discussions to compare and contrast cultural norms between the United States and Uganda. Further, seminars addressed the importance of ethical research practices, research designs, and qualitative data collection and analysis. To apply their learning, participants developed a research proposal and presented such to the class. Through this process, participants received constructive feedback and discussed ways they could move their proposed research projects forward.
Results/Conclusions
Results from this experience demonstrated that participants gained a deeper understanding of local issues and qualitative research as well as insight into cultural similarities and differences between the United States and Uganda. Through class discussions, participants also gained insight into the potential implications of their research to the local context. In addition, by engaging in the development of research proposals, participants acquired knowledge about conducting ethical research and began to articulate the differences between the quantitative and qualitative paradigms, especially concerning data collection and analysis. Finally, at the conclusion of the experience, participants, many who had training in the quantitative or empirical research paradigm, voiced positive views regarding the rigor and trustworthiness of qualitative research methods.

Recommendations/Educational Importance/Implications
This experience sought to empower Ugandans to address local problems through qualitative research methodology while also fostering cross-cultural understanding. Faculty designing study abroad experiences should consider facilitating graduate students in integrating their coursework and related skills to encourage deeper and more powerful cross-cultural and reciprocal learning exchanges between them and host country participants. Moving forward, this project might also serve as a useful example when designing study abroad learning experiences for graduate students in which their professional training and interests are shared with locals.

References
**Give Me Five! - Exploring Personality Traits of Short-Term Study Abroad Students**

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**Keywords**: Big Five, Study Abroad, Personality, Traits, Culture

**Introduction**

Over the years of research on individuals' personality traits, a theory emerged stating most individuals' personalities can be classified in five broad domains: Extraversion, Agreeableness, Conscientiousness, Neuroticism, and Openness – the “Big Five” (Northouse, 2013; Gosling, Rentfrow, & Swann, 2003). The “Big Five” have been used in multiple applications such as leadership, work and school performance, and educational settings (Northouse, 2013; Benet-Martinez, & John, 1998). Researchers have suggested cultural and ethnic differences may exist in addition to these five domains (Benet-Martinez & John, 1998).

**Purpose**

The purpose of this study was to describe the personality traits of the National University in Honduras students who participated in a short-term study abroad in the College of Agricultural Sciences and Natural Resources at Texas Tech University, and the relationship between participants’ traits and demographic characteristics.

**Methods**

There were 41 students who participated in the study. Students were asked to complete the “Big Five” questionnaire to identify their strengths and weaknesses related to personality traits during their study abroad experience. The instrument consists of 44 questions on a 5-point Likert-type scale (1 = Disagree Strongly, 2 = Disagree a little, 3 = Neither agree nor Disagree, 4 = Agree a Little, 5 = Agree Strongly). Descriptive statistics and point-biserial correlations were conducted to assess the relationship of participants’ traits and their demographics characteristics using SPSS®.

**Results**

The construct receiving the highest score was Conscientiousness ($M = 3.82$, $SD = .50$), followed by Openness ($M = 3.78$, $SD = .51$), Agreeableness ($M = 3.72$, $SD = .54$), and Extraversion ($M = 3.35$, $SD = .71$). Finally, Neuroticism ($M = 2.61$, $SD = .60$), which had the lowest score among participants. According to Davis Naming Convention (1971), there was no
relationship between personality traits and gender. There was a moderate negative relationship between age and Openness $r(41) = -0.32$, and between residency and Openness $r(41) = -0.32$. This means that as participant’s age increases their Openness decreases. Also, participants who live in urban rather than rural areas tend to score higher in the Openness construct.

**Recommendations**

Judge, Higgins, Thoresen, and Barrick (1999) highlighted the most relevant traits for career success are Conscientiousness, Neuroticism, and Extraversion. Participants of this study scored highest in Conscientiousness, indicating they are more goal-oriented with attention to details (Benet-Martinez & John, 1998). In fact, according to Judge et al., (1999), “[it is] a valid predictor of success at work” (1999, p. 624). Nonetheless, Neuroticism and Extraversion traits were found to be in the mid-range of the scale. On the other hand, Openness was the second highest score, which is related to more effective collaboration in cross-cultural situations as well as having higher acculturation (Caligiuri, Jacobs & Farr, 2000). This study provided a snapshot of high school students in study abroad, therefore it is recommended to evaluate if the Openness trait changes after a short term study abroad program, and identify the extent to which characteristics such as age and location (urban versus rural) may influence individuals’ trait.

**References**


Giving Back: International Service Learning in a Study Abroad Program

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Keywords: Study abroad, service learning, satisfaction, community

Introduction
Internationalization of curriculum has become an important component in education worldwide. Multiple students participate in study abroad courses every year, however, it is unclear the impact they have in the locations and communities they visit (Schroeder, Wood, Galiardi, & Koehn, 2009). Service learning may represent a mechanism to engage the community and students during study abroad programs. Incorporating service learning activities allows students to immerse deeply in the experience and contribute to the community from whom they are learning (Bringle, Hatcher, & Jones, 2011).

A University developed a study abroad program incorporating service learning activities. The study abroad focused on the challenges and solutions to the triple burden disease in South Africa from a food insecurity perspective with hands-on experiences.

Purpose and Objectives
The purpose of this study was to evaluate community satisfaction with workshops provided by study abroad students. These objectives guided this study:
1. Evaluate the participants’ workshops satisfaction of trainings provided by students.
2. Assess qualitatively the participants’ overall experience in the training programs

Methodology
Students participating in the study abroad program developed and delivered three extension trainings to community members. Training topics were requested by the community to the organizers of the program: healthy lifestyles. Herforth, Jones, and Pinstrup-Andersen (2012) indicate that “some nutrition-relevant information is best communicated by agricultural extensionists or project staff” (2012, p. 34). A total of 136 community members participated in the workshops and were asked to complete the satisfaction instrument developed by Russell (2012) on a Likert-type scale from strongly disagree (1) to strongly agree (7). Reliability was established by the author and is considered acceptable. As part of the evaluation, participants were asked to provide written comments regarding their experience.
Results

Overall, the participants’ results were skewed toward the strongly agree section of the scale. The lowest value was recorded in participants perceived net goal attainment ($M = 6.75; SD = .51$), followed by their satisfaction with the meeting processes ($M = 6.78; SD = .48$), and their satisfaction with the meeting outcome ($M = 6.86; SD = .41$).

From the Qualitative Assessment of participants’ commentary four themes emerged: learning, satisfaction, and return. Participants expressed how the activity was a learning experience that impacting their lifestyles. Others focused on how satisfied they felt with the activity, and wished the student would return to their community.

Educational Importance

In this study abroad, participants’ assessment provides a reflection of the community experience as the other side of the coin in a study abroad program. The findings indicate the community was satisfied with the students’ activities. The addition of a service learning component may have created the cohesiveness suggested by Schroeder et al. (2009) between community and students mitigating any potential negative impact from the program. This creates a learning experience for students and community (Bringle et al., 2011). In addition, the service to the community contributes to building long-term relationship between communities and academia as suggested by Schroeder et al. (2009).

References


Model Development of Distance Learning Curriculum on Food Safety and Organic Agriculture Based on the Sufficiency Economy Philosophy

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Keywords: Model Development, Distance Learning Curriculum, Food Safety and Organic Agriculture, Sufficiency Economy Philosophy

Introduction
The remarkable feature of distance learning curriculum on food safety and organic agriculture based on the sufficiency economy philosophy will be different from typical education courses in the following aspects: use of videos as a major tool in the learning process, learning by doing (Reigeluth, 2013; Foster & Rosenzweig, 1995), and group study by people living in adjacent communities (Ashman & Gillies, 2003). The course is divided into two stages; Understanding: providing content-based lessons to increase understanding of the concept and knowledge. Learners will study from selected videos before attending a group study to exchange opinions, analyze and conclude the lessons together. Putting Lessons into Action and Development: focus on action learning to prepare learners for a transition to safety and organic agricultural practices using the sufficiency economy principles as guidelines.

Purpose and objectives of the abstract
The research aims to develop a distance learning curriculum model on food safety and organic agriculture based on the Sufficiency Economy philosophy and to evaluate the learning curriculum model and its learning management processes.

Methods and Data sources
This research employed Research and Development method in collecting both quantitative and qualitative data. To develop the curriculum model, seminars and sessions were
organized. Fifteen participants including seniors and experts of safety food, organic agriculture and Sufficiency Economy philosophy together shared and exchanged the information.

During the process of the model evaluation using the CIPP Model (Stufflebeam, Madaus, & Kellaghan, 2000), a questionnaire was administered on 348 learners. The quantitative data obtained was analyzed in terms of their percentage, mean, and standard deviation. The qualitative data was analyzed with the content analysis.

**Results and Conclusion**

The process of the curriculum model were: to define the aspects and ways to develop the curriculum model; appoint of working group members and consultants; determine the objectives of learning and their processes; identify problems, expectations, and learning objectives; study visits of the centers for distance learning of sufficiency economy; design and propose the curriculum; develop the Memorandum of Understanding with affiliated organizations; critically analyze the curriculum model and give the suggestions; develop the distance learning curriculum; pilot the learning model into practices; evaluate the achievement of the learning model implementation.

The results of curriculum model evaluation and its learning management processes were;

**Context:** the learners’ opinion toward the 5 item-curriculum objective were both high and highest level. **Input:** the learners’ opinion toward the 7 subject-structure and contents were both high and highest level. Their opinions toward appropriateness of other support factors of the curriculum were also high and highest level. **Process:** their opinions toward appropriateness of the learning process and the desired learning outcomes were high and highest level. **Product:** their opinions toward achievements of curriculum output were both high and highest level.

In conclusion, the learners were very satisfied toward the learning curriculum designed in a high and highest level.

**Recommendations**

The support factors to ensure learning success were; various organizations must cooperate and work closely together, favorable learning environment, active support of learning management and coordination.

**References**


Keowan Bumpen et al. (2015). Model Development of Safety and Organic Agriculture Upheld the Sufficiency Economy Courses through Distance Education. Sukhothai Thammathirat Open University, Thailand.


Productive Partnerships Support Project in Paletara, Colombia: A Qualitative Case Study

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**Keywords**: Productive Partnerships, Business Model, Value Chain, Participatory Methods

**Introduction**

Public-Private Partnerships (PPP) are a form of cooperation between government and business in which each party agrees to work together to reach a common goal or carry out a specific task, jointly assuming the risks and responsibility and sharing their resources and competences (MFA, 2013). PPPs are key for the agricultural sector as they can bridge public and private sector competencies and interests. Additionally, PPP contribute to capacity building, provide training on the best agricultural practices and improve market conditions and access for smallholder farmers (CropLife, 2009).

The Productive Partnerships Support Project of Colombia has been a pioneering experience in Latin America and the Caribbean for job creation, income generation and promotion of social cohesion in rural communities by linking smallholder farmers to markets through the consolidation of productive partnerships between producer organizations and commercial partners (FAO, 2010).

**Purpose and Objectives**

The purpose of this qualitative study was to document the experience of the milk productive partnership of the indigenous population from Paletara, in the department of Cauca, Colombia. The specific objectives were to: (a) map the value chain (b) describe the business models before and after the project implementation; and (c) evaluate the six business model principles.

**Methodology**

This study was conducted utilizing participatory methods (focus groups, mapping, visualization and other forms of facilitated reflection). Specifically, the Link Methodology which is a participatory guide to business models that links smallholders to markets (CIAT, 2012). Data collection procedures included the: (a) value chain map, (b) business model canvas, and (c) new business model principles.
Results

A visual map of the value chain facilitated an understanding of the milk productive partnership’s dynamics and revealed the key actors involved in the chain along with the linkage points and gaps between actors (See Figure 1).

*Figure 1. The Value Chain Mapping. Adapted from Link Methodology, CIAT, 2012.*

The business model canvas helped assess the business model followed by the producers’ organization (See Figure 2). Finally, the six business model principles revealed the benefits of the project beyond profit in the context of smallholder inclusion, the producers’ organization perceived a level of inclusion of the business relationship of 19% while the commercial partner perceived 56%.
Conclusions

The Productive Partnerships Support Project of Colombia allowed the indigenous producer organization in Paletara to start a business relationship with a commercial partner and assure the sale of milk. Also, after project implementation the producer organization received the following benefits: fixed payments, technical assistance, agricultural supplies, financial credits and training. Moreover, the productivity and production improved due to a better ability to feed and milk the cattle, improvements in transportation and milk processing. The agricultural projects linking smallholder farmers to markets are important to improve the economic conditions of small-scale producers in developing countries. Based on the findings, it is recommended to evaluate the experiences in other countries and compare the results to improve the project design and encourage adoption by others.

References


International Center for Tropical Agriculture (CIAT in Spanish). (2012). *Link methodology: A participatory guide to business models that link smallholders to markets* (CIAT
Productive Partnerships Support Project in Paletara, Colombia: A Quantitative Case Study

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Keywords: Household Surveys, Poverty Index, Food Security, Productive Partnerships

Introduction
Cauca is one of 32 departments in Colombia and is located in the south-western part of the country. It is among the regions where most of the population lives in rural areas. After the department of La Guajira, it is the region with the highest indigenous population and the fifth most afro-descendants (Gamarra, 2007). Cauca’s economy is mainly based on agriculture and livestock production, dairy, forestry, fishing, and trade.

Strengthening the agricultural sector in the region is one of the main objectives of the departmental development plan. In this regard, different programs have been promoted and implemented by the Ministry of Agriculture and the private sector. For example, the Productive Partnerships Support Project of Colombia that seeks to generate income, create employment and promote social cohesion of poor rural communities in an economic and environmentally sustainable manner through the development and implementation of a demand-driven, productive partnership scheme with the private sector (World Bank, 2015).

Purpose and Objectives
The purpose of this quantitative study was to document the experience of the milk productive partnership of indigenous population from Paletara, located in the department of Cauca, Colombia. The specific objectives were to: (a) describe the indigenous producer organization by number of beneficiaries, farm average size, type of crops, gender, and education; (b) calculate the Progress out of Poverty Index (PPI); and (c) determine the food security status of smallholder farmers’ households.

Methodology
The study employed micro-level household surveys that allowed researchers to gather data at the household-level on income, opportunities, employment, knowledge, food security, vulnerability and the probability that a household is above or below the poverty line. To capture a snapshot of poverty levels, the PPI was calculated (Grameen Foundation, 2008). The Latin-
American and Caribbean household food security scale (ELCSA in Spanish) was used to determine the food security status.

**Results**

The data revealed that on average each producer had 8.78 hectares for agricultural production \((n = 158)\). The majority of producers reported that the most of their income comes from milk production \((89.94\%, n = 141)\), followed by agriculture \((8.3\%, n = 13)\), combining agriculture and milk production \((1.27\%, n = 2)\) and non-agricultural activities \((1.27\%, n = 2)\). The average age of the household head was 45 years. 76.43\% \((n = 120)\) of household heads were male and 23.57\% \((n = 37)\) were female. The highest education level was five years \((24.84\%, n = 39)\). The PPI revealed a high likelihood of being below the national poverty line (See Table 1).

<table>
<thead>
<tr>
<th>PPI Score</th>
<th>Likelihood of being below the national indigence line (%)</th>
<th>Likelihood of being below the national poverty line (%)</th>
<th>Likelihood of being below 2.5 U.S. dollars a day (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>30.92</td>
<td>17.5</td>
<td>60.9</td>
<td>29.3</td>
</tr>
</tbody>
</table>

In contrast, severe food insecurity is low both in households without children under 18 and those with young children (See Tables 2 & 3).

<table>
<thead>
<tr>
<th>Food Security Status</th>
<th>Number of Producers</th>
<th>Percentage</th>
</tr>
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<tbody>
<tr>
<td>Security</td>
<td>16</td>
<td>40</td>
</tr>
<tr>
<td>Low Food Insecurity</td>
<td>22</td>
<td>55</td>
</tr>
<tr>
<td>Moderate Food Insecurity</td>
<td>1</td>
<td>2.5</td>
</tr>
<tr>
<td>Severe Food Insecurity</td>
<td>1</td>
<td>2.5</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>40</strong></td>
<td><strong>100</strong></td>
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</tbody>
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<table>
<thead>
<tr>
<th>Food Security Status</th>
<th>Number of Producers</th>
<th>Percentage</th>
</tr>
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<tbody>
<tr>
<td>Security</td>
<td>41</td>
<td>34.45</td>
</tr>
<tr>
<td>Low Food Insecurity</td>
<td>54</td>
<td>45.38</td>
</tr>
<tr>
<td>Moderate Food Insecurity</td>
<td>19</td>
<td>15.97</td>
</tr>
<tr>
<td>Severe Food Insecurity</td>
<td>5</td>
<td>4.2</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>119</strong></td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>
Conclusions

Although the project aimed at improving the market opportunities of the producers’ organization, the micro-level surveys allowed to know more in depth the households’ living conditions. It is recommended to include a micro study when evaluating projects that allow smallholder farmers to link to markets in order to improve the project design and assessment.

References


Rethinking Your Space: Design Approaches to Enhance Individual Food Security

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Keywords: Micro-Gardens, Food Security, Garden Design,

Introduction
As the world population grows to nine billion people by 2050 creative solutions to food security problems will need to be further explored. Negative impacts on global food security will be visible within the next decade as a result of an expanding population (FAO, 2005). Inspiring individuals to creatively contribute to the production of food and fibers in small spaces is one such creative solution. Small spaces can be transformed by adopting modern garden design solutions that introduce agriculture in urban patios, terraces, and balconies.

Purpose
This poster’s purpose is to entice individuals to use innovative materials and modern design solutions to creatively contribute to their own food security. This poster will illustrate a set of views and images developing by the research team (e.g. plans, elevations, cross sections, axonometric views, diagrams) representing modern garden design solutions. The drawings illustrate how these elements fit in small spaces. Specifically, the poster will show modern garden solutions from which other forms can be developed, or copied, to meet the needs for food self-sufficiency.

Methods
A set of forward-looking design theories provides a framework useful for rethinking and redesigning micro-gardens. Theories will include design notions such as recycling and integration. For instance, an integrated design applies in the case of a stainless steel green wall that is integrated into the structure of a micro-irrigation system. Water is sprayed and used as a medium for hydroponic vegetables growth. This modern design garden solution integrates an heterogeneous assemblage of parts and functions with the effect of producing abundant and nutritious food on a stainless steel wall.

Results
Growing your own food is a tremendous opportunity for all of us as we individually strive for food security. Starting and maintaining productive food gardens in confined spaces of homes is problematic for the majority. Challenges include lack of space, lack of knowledge and skills, and time constrains (Lindner & Dolly, 2012). The creative use of modern materials and the adoption of innovative design strategies spark the interest of wider audiences on agriculture.
Recommendations, Educational Importance, Implications, Applications

The merging of garden design and agriculture offers new approaches to enhance food security at the individual level, agricultural literacy, meet the food needs of individuals, and touch wider audiences. The educational importance of this poster focuses on two interrelated implications: the significance of teaching people how to productively grow food and fibers by using available resources, and the unique interdisciplinary opportunity offered by creatively investigate contemporary issues in agriculture.

References
Students’ and Employees’ Pre- and Post-Perceptions of a Hybrid Study Abroad and Extension Professional Development Experience to China

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Keywords: study abroad, professional development, student perceptions, employee perceptions

Introduction
Many agricultural commodities produced in the southern United States are exported to China, and there is growing interest by smaller scale agricultural operations to expand this partnership (USDA Foreign Agricultural Service, 2012). University students with an interest in agriculture and international trade, as well as Extension agents serving local agricultural producers interested in growing their operations internationally, need a better understanding of trade relations between China and the U.S. and related international agricultural policies and their effect on U.S. agriculture. As such, a mixed study abroad and professional development trip to Shanghai and Beijing, China was organized in 2016.

Purpose
The objective of this study was to assess the perceptions of both university students and employees (specifically Extension agents and faculty specialists) before and after participating in this hybrid study abroad and professional development experience.

Method
Data was collected through an online survey via Qualtrics software one week prior to the trip and within 30 days after the participants returned. There were two distinct groups of participants for this study: students earning college credit for a study abroad experience and Extension employees engaging in a professional development opportunity. Two versions of both the pre- and post-survey were tailored for each group based on three of four constructs, depending on the respondent: Self-Involvement (individual perceptions), Employee Involvement (student perceptions) or Student Involvement (employee perceptions), and Student-Employee Interaction. These constructs were adapted from the Involvement and Interaction Rating Scale, an assessment tool used to measure youth and adult perceptions of their experiences working together (Jones & Perkins, 2005).

Results
For the perception surveys completed by employees (n=10), there were statistically significant (p=0.035) differences for two subscales – Taking Initiative and Demonstrating Independence – within the construct of Student Involvement. Additionally, the pre- and post-
perception rating for the subscale of Working Collaboratively, within the construct of Student-Employee Interaction, was statistically significant (p=0.035). All three indicated an increased positive perception on the part of the employees. For the pre- and post-perception surveys completed by the students (n=6), the mean scores for the three subscales – Taking Initiative, Sharing Ideas, and Demonstrating Independence – within the construct of Self-Involvement increased, but the change was not statistically significant. The mean post-perception ratings for all the subscales across the Employee Involvement and Student-Employee Interaction constructs decreased. Of those, only the change in rating for the subscale of Working Collaboratively, within the construct of Student-Employee Interaction, was statistically significant (p=0.071), with scores of 3.83 (pre) and 3.20 (post).

These results suggest a greater perceived benefit among Extension employees than among students for this type of mixed learning opportunity. Students expressed improved perceptions of their own involvement in the experience, but decreased perceptions of the employees’ involvement during the trip and interaction with students.

**Recommendations**

More in-depth analyses of why students reported a less positive experience than employees may provide opportunities to improve the value of future mixed study abroad and professional development experiences. Since this was a small sample assessing a single trip, additional analyses of similar hybrid experiences are recommended.

**References**


What did Aspiring Young Entrepreneurs Recognize as Business Opportunities in Nicaragua? – Using Photovoice to Collect Data

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Keywords: development, entrepreneurship, opportunity recognition, photovoice, youth

Introduction/Need for Research/Conceptual Framework

Entrepreneurs are frequently viewed as super humans capable of solving all problems, especially if operating in resource-rich contexts (Williams & Nadin, 2013). Less is known about entrepreneurship as an approach to achieving prosperity in impoverished communities (Seelos & Mair, 2007). Opportunity recognition based on perceived resources to create a new venture is the foundation phase of the entrepreneurship process (Baron, 2006; Singh, 2001). Photovoice is a data collection method involving photography, which empowers people to more openly express themselves and tell their stories through images (Delgado, 2015; Wang & Burris, 1997).

Purpose/Research Questions

This study’s purpose was to explore the entrepreneurial opportunities Nicaraguan high school students recognized in their communities. Four research questions guided this investigation: 1) Which business opportunities were recognized by aspiring young entrepreneurs considering their existing resources? 2) What were their reasons for the recognition of business opportunities? 3) Which existing resources were considered important for their business opportunities and why? 4) What was learned about using Photovoice for data collection?

Methods

Participants included purposively selected 10th graders who received general and vocational education in two options: sustainable agriculture and ecotourism. Students used their mobile telephones or were provided disposable cameras to take photos. Analysis of the visual data was combined with students’ demographic information, in-depth written statements about business opportunities, and written prompts for their photos (Delgado, 2015). Tracy’s (2010)
eight big-tent criteria for excellent quality in qualitative research were followed.

Results
Fifteen females and five males participated; 12 in ecotourism and eight studying agriculture; average annual family income was $3200 USD. The business opportunities recognized were mostly related to the students’ study options. Reasons for recognizing opportunities were to help themselves and their families, mainly financially, by providing a quality service or product for others, including their surrounding communities and more widely. Students self-identified with the product or service through previous knowledge, experiences, or personal preferences. An opportunity to make things better was a common theme. This mission of creating social wealth is supported by Mair’s and Martí’s (2006) contentions about social entrepreneurship. The students mainly photographed local resources as important to their businesses and showed a high capacity to link such with local markets by connecting the dots (Baron, 2006). Two main lessons were learned regarding Photovoice: a) photographic guidelines should be clear but not restrictive, i.e., avoid conditioning expressibility (Delgado, 2015); b) a local facilitator aids in overcoming obstacles and building participants’ trust.

Conclusions/Recommendations/Educational Importance
The poor are able to recognize business opportunities in concert with their economic conditions (Seelos & Mair, 2007) and need not be super humans (Williams & Nadin, 2013). Although the study’s findings should not be generalized beyond the participating sample, some transferability may exist for similar settings (Creswell, 2013). Further research should be conducted on opportunities leading to business creation. Opportunity recognition has implications for agricultural and rural development curricula and training, including extension programming for youth development.

References

Abstracts from the 2017 Annual Conference of the Association for International Agricultural and Extension Education
A Change in Perspective: Agriculturally-Based Study Abroad Experience for Nicaraguan Students

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Keywords: study abroad, graphic elicitation, agriculture, youth development, 4-S

Introduction

The academic (i.e., language skills, problem solving, and geographical knowledge), professional (i.e., professional contacts, sense of responsibility, and future career choices), personal (i.e., personal identity, confidence, and appreciation), and intercultural (i.e., interest in culture, cultural sensitivity, and diminished ethnocentrism) competencies of students are four typical areas which may be enhanced in a study abroad experience (Michigan State University, 2004).

Although, positive attributes have been associated with international experiences, the need to measure the learning outcomes of students—participating in study abroad programs—is needed (Van de Berg, 2001). Gillespe (2003) argued improved assessment of study abroad programs, by means of qualitative and quantitative measures, should be set by every program. In the present study, the effects of a four day agricultural-based program, in Texas Tech University, on Nicaraguan 4-S members’ academic, professional, personal, and intercultural competencies, was assessed by arts-based projective techniques and graphic elicitation. These qualitative techniques allow participants to reflect on their international experience (Gauntlett, 2007). Furthermore, arts-based prospective and graphic elicitation techniques are commonly used in cross-cultural research to accommodate participants who struggle to express their thoughts verbally (Bagnoli, 2004).
Purpose and Research Questions

The purpose of this qualitative study was to examine the influence of a four day agricultural-based program on Nicaraguan students’ perception of agriculture and future aspirations. A total of four research questions guided this study:

1. What are the major life milestones perceived by Nicaraguan students?
2. How did the international experience impact the Nicaraguan students’ perceptions of future aspirations?
3. How do Nicaraguan students perceive the field of agriculture?
4. How did the international experience impact the Nicaraguan students’ conceptualization of agriculture?

Methods

The participants in this study were 20 Nicaraguan students, who traveled to Texas Tech University for an agriculturally-based workshop. The students were part of the Nicaraguan agricultural group, 4-S, equivalent to 4-H in the United States. In regard to the sex of the students, eight (40%) students were female and 12 (60%) were male. The ages of the students ranged from 12 to 21, with an average age of 17.

Data was collected through student illustrations (i.e., graphic elicitation and arts-based projective techniques) at the beginning and at the end of the program. Illustrations were complemented with short interviews to provide a deeper insight and understanding of their drawings. At the beginning of the program, students were asked to create illustrations—in black ink—of their view of agriculture and construct a timeline depicting the most important milestones in their lives. Over the next three-day period, participants were taken to agriculturally-related tours on campus (e.g., meat lab and seed generation plant), and in the surrounding areas (e.g., dairy tour and humanitarian relief tour). At the conclusion of the four day program, students were given their illustrations back and were asked to make any changes/additions—in blue ink—of their view of agriculture and future aspirations if desired. Short interviews were conducted at the end of the program where students explained their initial drawings and changes made afterwards.

Grounded theory methods were used, open coding and axial coding, to identify emerging themes in the analysis of interviews and illustrations. Interviews were conducted in Spanish, they were recorded, transcribed, and translated to English. Interviews were matched to their illustration and analyzed concurringly to identify the emerging themes. NVIVO® software was used for coding. Interviews provided a rich description of the data and were key for interpretation and confirmation of the findings. In addition, a deeper analysis of the drawings was conducted in conjunction with interview transcripts by three different members of the research team to increase trustworthiness of the study and reach data saturation.

Results

There were nine themes that emerged from interviews and drawings provided by participants: previous agriculture, agricultural process, care for the world, aspirations, education is key, learning new things, ripple effect, thankful, and unity. Themes represent students’ reflections based on their own experiences, background, and how the study abroad provided them a unique experience. For instance, the themes of previous agriculture and agricultural process illustrate how students thought about agriculture in their home country and how through this experience and learning new things their view of agriculture expanded, such as learning
about cotton and livestock production. While the theme thankful and aspirations illustrate how the international experience had a positive impact on their present and future ambitions, in particular a career in agriculture. Most importantly, the educational experience also served as a catalyst for a ripple effect, in which the participants indicated they will disseminate educational and agricultural information to others in Nicaragua. Figure 1 illustrates an example of the students’ view of agriculture before and after the agriculturally-based workshop illustrating the themes of unity, care for the world, previous agriculture, and aspirations. The parts of the illustration which are in black ink represent the initial drawing; the blue ink represents the augmentations or additions made at the conclusion of the youth development/leadership workshop.

![Figure 1. Student Graphic Elicitation of "My View of Agriculture"

Recommendations/ Implications
Agriculture is a global phenomenon. We all depend on agriculture to survive, as one of the participants said “without agriculture there is not product, without product there is no food,
“without food we die”. The agriculturally-based study abroad can be seen as a potential diffusion of innovation of the 4-H model as well as agricultural technology. Indirectly, students in some way were persuaded by the relative advantage, compatibility, complexity, triability, and observability of different innovations in agriculture (Rogers, 2003). It is recommended to evaluate the other side of the coin, which is the impact that having students from 4-S Nicaragua had on members and collaborators of the program in the host country, by learning from each other, especially regarding the similarities and differences between 4-H and 4-S. It is also recommended to conduct a follow up with participants in their location to assess if their intentions actually became behaviors.

References
Michigan State University Office of Study Abroad. (2004). *Why should I study abroad?* Retrieved from the University of Michigan Study Abroad Website: http://studyabroad.msu.edu/shared/objectives.html
A Conversation with Nursery Growers: Informing Extension Programs Encouraging Adoption of Water Conservation Treatment Technologies

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Keywords: Diffusion of innovations, water conservation, adoption, technology adoption

Introduction
Water resources are becoming increasingly sparse (Fielding et al., 2013; Huang & Lamm, 2015) and by 2025 two out of three individuals will live in areas affected by water scarcity (UNEP, 2008). Therefore, conservation practices are an essential way to ensure adequate water for future generations. Greenhouses and nurseries use an excessive amount of water and are negatively impacted by the decreasing amount of suitable water available to irrigate plants (Niu et al., 2011). Water conservation technologies have been developed to apply water more precisely (Lea-Cox et al., 2013) including drip technology and soil moisture sensors, which allow for more efficient irrigation scheduling (Lichtenberg, Majsztik, & Saavoss, 2013). Gaining growers’ acceptance and implementation has been limited (Majsztik, Lichtenberg, & Saavoss, 2013) and globally, Extension programs may play an important role in encouraging adoption (Heaton, Barnhill, & Hill, 2012; Noruzi & Chizari, 2006).

Purpose and Objectives
The purpose of this study was to develop an understanding of growers’ barriers and motivators related to adoption of water conservation practices and treatment technologies so that targeted extension programs can be developed to increase adoption. Using Rogers’ (2003) Theory of Diffusion, the study was guided by the following objectives: explore nursery and greenhouse operators’ perceived (1) relative advantage, (2) compatibility, (3) complexity, (4) trialability, and (5) observability associated with adopting water conservation practices and treatment technologies.

Methods
A qualitative research approach was employed to obtain a deep understanding of nursery and greenhouse operators’ perceptions of water-related issues. Twenty-four face-to-face
interviews were conducted across the U.S., with targeted growers and upper management personnel with extensive knowledge about each facility’s water usage. A semi-structured interview guide was developed based on the five characteristics of an innovation (Rogers, 2003) and used to encourage interviewees to describe their operations, their role within the operation, and irrigation management decisions.

All interviews were recorded and transcribed verbatim. Pseudonyms were used to ensure anonymity. Content analysis was performed using MAXQDA (v. 12.0.0, VERBI Software, Berlin, GER) because it facilitates the development of valid inferences from qualitative data (Krippendorff, 2013). Data were stratified a priori using Rogers’ (2003) five attributes of an innovation and reviewed by the data analyst both before and after content analyses to reduce bias and ensure rigor (Mays & Pope, 1995). Integrity and credibility of the data were maintained by creating an audit trail and a peer review was completed to ensure transferability (Lincoln & Guba, 1985).

Results

Relative Advantage

Participants perceived irrigation water saving innovations as less wasteful and more advantageous than traditional watering methods (e.g. overhead sprinklers and hand-watering). Adam and Frank mentioned drip irrigation was more “efficient” for water conservation compared to overhead sprinklers. Rhonda justified her operation’s use of specific technologies by saying, “We use booms, and sub-irrigation, and [drip], so that [watering techniques] are not wasteful. We don’t have sprinklers [because] it’s not an efficient watering method.”

Compatibility

Jason wanted to use more micro-irrigation, however his operation’s infrastructure did not permit the implementation of such technology. Jason explained, “we developed the automated system in 1992, and the rest of the nursery was built prior to that time, retrofitting that has been prohibitively expensive.”

Complexity

Participants thought many water conservation and treatment technologies were too technologically advanced or tedious for their operation. Steve, Rhonda, Robert, and Tyler have all postponed implementing technologies due to their comfort level. In regards to drip tape, Steve stated “Consistency’s an issue…We have not felt comfortable about that style of production to make it happen with that.” Robert believed that a soil moisture system was too technical and not user-friendly for the average grower, “a lot of the guys that work for us did not feel comfortable working with this system. It needs to be easy to use for just a general person.”

Trialability

Herbert explained that his operation constantly tested sprinkler systems to determine their effectiveness before implementing them. Herbert said, “we have the overhead spinners in our shade houses. We actually trialed those, because of the more uniform distribution and the lower flow rate, [which] was a better way to water.” Robert recalled conducting Internet research in an attempt to find effective watering technology. Robert stated, “I remember chatting with somebody online about this technology, a local irrigation store got me some samples, I felt comfortable, I tried it for a while, I turned one house into that overhead irrigation [system].”
Observability

Phil acknowledged he had observed water-related technologies at other growers’ operations and eventually implemented them. Phil assertively stated, “…you visit nurseries, you see things, you steal ideas, back and forth. I don’t know if that’s innovative or what it is…When I go, I’m looking at their irrigation system.” Phil went on to say, “We’ll have people that come, and that’s all they want to see is our pump houses.” Jason said, “We look at research that’s been done in other places and see how it can apply to our nursery. We also sometimes invite researchers to come and do research on our property.”

Implications and Recommendations

The results revealed barriers and motivators associated with adoption. Growers expressed a) time and money were challenges to adoption, b) new technologies were not always compatible with existing systems, c) new technologies are too complex to easily integrate into current practice, d) new technologies are difficult to try but when they can see them in action they are more likely to adopt and e) social norms play a large role in adoption. Extension educators should emphasize the benefits of adoption when creating programs (emphasizing the financial aspects), create educational experiences including YouTube videos and instruction manuals to reduce perceptions of complexity and work with scientists developing new technologies to ensure they are compatible with existing systems. In addition, since social norms are playing a large role in adoption, extension educators can help growers shift perceptions and recognize adoption as the new norm. To further this line of research a quantitative study should be conducted to further understand these results and to generalize the findings beyond these 24 participants.

References


An Expertise-Oriented Evaluation of the M.S. and Ph.D in Agriculture at Bangabandhu Mujibur Rahman Agricultural University, Bangladesh

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Introduction

At the 2010 Strategic Leaders Global Summit on Graduate Education a consensus document identifying the Principles and Practices for Assessing the Quality of (Post)-Graduate Education and Research Training (Council of Graduate Schools, 2010) was produced. According to this document, the primary objective of quality assessment is to ensure and improve the quality of (post)-graduate training, student learning and professional development. Aside from an assessment of research quality, it was suggested that topics such as admissions criteria and recruitment, student learning outcomes (including transferable skills), mentoring and supervising structures, infrastructure for (post)-graduate student training, quality of student experience, measures of completion and attrition, and career placement both inside and outside academe be assessed.

Stewart, Denecke, and Brown (2009) posited that two domains exist when looking at (post)-graduate education. Some things are knowable. (Post)-graduate education leaders can look at the past and make decisions in a reactionary manner. Others are unknowable and will impact (post)-graduate education in the future. Those who provide (post)-graduate education must develop the ability to think and act with the future in mind in an effort to position their institutions to meet and shape the future for graduate students and programs.

In May of 2016, an expert team traveled to Bangabandhu Sheikh Mujibur Rahman Agricultural University (BSMRAU) in Gazipur, Bangladesh to conduct a volunteer assignment aimed at improving the M.S. and Ph.D programs in Agriculture. This project was administered by Winrock International and funded by USAID as part of the Farmer-to-Farmer program.

Two major concerns/constraints were confronted while conducting this evaluation. First, the idea of program improvement evaluations were new to the higher education culture at
BSMRAU. That said, it was BSMRAU who approached Winrock International with the idea of inviting an evaluation team to visit their campus. Second, Bangladesh has been the target of terrorist attacks to some degree. This threat hindered movement outside of the University campus thus preventing the team from interacting with individuals not part of the University.

**Purpose and Objectives**

BSMRAU has been offering course credit-based MS and PhD in Agriculture degrees since 1991. The purpose of this evaluation was to assist with updating these programs to meet the demand for well-equipped professionals with relevant education and hands-on skill in agriculture. BSMRAU elected to seek assistance from external experts in the identification of improvements which should prove more applicable and useful in providing demand-driven and climate resilient solutions to the problems arising in agriculture due to changes in the environment and human demand. The objective of this evaluation was to make recommendations aimed at improving the existing MS and PhD Agriculture Programs.

**Methods**

The experts elected to employ an expertise-oriented approach (Fitzpatrick, Sanders, and Worthen, 2011) to proceed with this evaluation. Although many sources of data were determined a-priori, the experts remained receptive to unanticipated or emergent sources of data as the project progressed. The expert’s time at BSMRAU was limited to ten days. As such, it was important to be as efficient as possible to get a clear understanding of the MS and PhD programs. Among the sources of data were public stakeholders, private stakeholders, and a competing university. Public stakeholders sources included: a pre-assignment questionnaire, Bangladesh Agricultural Research Institute (BARI), Bangladesh Rice Research Institute (BRRI), National Agricultural Training Academy (NATA), BSMRAU administrators and faculty, BSMRAU MS and PhD students, multiple tours of BSMRAU facilities, Bangladesh Institute of Nuclear Agriculture, and numerous documents including degree plans, course descriptions, and syllabi. The private stakeholder source was Lal Teer Seed Limited (facilities, administrators, and scientists). The competing university was Bangladesh Agricultural University (BAU) (BAU was included because there was an indication that some faculty at BSMRAU were promoting the idea of moving from a quarter system to a semester system such as was present at BAU).

**Conclusions**

Overall, the expert team was impressed with BSMRAU. It should be noted that BARI, BRRI, NATA, Lal Teer, and the Institute of Nuclear Agriculture all currently employ BSMRAU graduates and are satisfied with their performance. The following major conclusions were reached by the expert team: 1) when comparing semester credits (BAU) with quarter credits (BSMRAU) it is noted that typically more credits are required by institutions on the quarter system. This considered, BSMRAU requirements are on par with BAU. No compelling evidence was found necessitating a move to the semester system; 2) No provisions are made by the university to provide students and faculty with plagiarism software. BSMRAU should seek to obtain such software; 3) No centrally supported Learning Management System (LMS) is available. Online learning is an important part of (post)-graduate education and the University should work to adopt an LMS; 4) No Comprehensive Academic Continuous Improvement Program (CACIP) is in place. A CACIP would provide the university with a means by which outcomes and critical success factors could be identified which would aid the university in
continuously improving their programs; and 5) MS and PhD programs are ‘fixed’ in that students have little opportunity to tailor their coursework to align with their interest and career goals.

**Recommendations**

Recommendations included: 1) provide allowances in degree plans for internships. BARI, BRRI, and NATA employ large numbers of BSMRAU graduates. Internships would provide rich learning opportunities plus allow potential employees/employers to ‘try-out’ careers/employees; 2) develop policies related to the responsible conduct of research including protection of human subjects, protection of animal subjects, standard operating procedures for handling, transporting, and otherwise using live cultures, bacteria, viruses, and other biological agents, chemical hygiene, and health and safety of lab workers, field workers, and students; 3) establish a thesis and dissertation support center; 4) develop a grant writing course; 5) research should focus on ‘real life problems.’ Bangladesh is one of the most densely populate countries in the world. Transdisciplinary research dealing with climate variability, cropping density, salinity, and farming systems would have great impact on the ability of Bangladesh to produce food and fiber; and 6) Post-graduate faculty should adopt R software for statistical analysis. This software is open source and will mitigate the potential for using pirated software.

**References**


Introduction

Obstinate problems of society and the environment (e.g. gender inequity, food insecurity, mitigation/adaptation of climate change) are solved in part through workforce development programs. Addressing these issues require that institutions modify their curricula and respond to the needs of their larger community of stakeholders (Kenny, Simon, Kiley-Brabeck, & Lerner, 2002).

This paper presents the results of an on-site external review of the B.S. in Agriculture (BSA) program at Bangabandhu Sheikh Mujibur Rahman Agricultural University (BSMRAU) conducted May 2016. It was sponsored by the United States Agency for International Development and facilitated by Winrock International (Winrock). BSMRAU was established in 1998 as a public university near Dhaka and the BSA is reflective of courses in many plant and soil science programs. The BSA is a four-year degree that is offered as a fixed curriculum. Most of the 394 students are traditional residential undergraduates. The Agriculture Faculty consists of 105 staff members.

The conceptual framework for this study is based upon the literature in higher education planning and assessment. Mets (1997) outlined a process for successful program review which includes the establishment of internal program review council, self-studies, external reviews, administrative updates, annual reviews, and progress reports. These activities are undergirded by leadership support, communications, and linking the budgeting process to the program assessment process to encourage investment in strategic priorities. Outcomes of a well-designed program evaluation process can range from curricular modifications to administrative reorganizations (Paloma & Banta, 1999).
Purpose and Objectives

The intent of this paper is to document the evaluation findings for the benefit of other evaluators. Higher Education institutions in the newer member countries of the Commonwealth of Nations are in transition from the British system of to their own unique country-level delivery systems. BSMRAU sought to provide more applicable and useful demand-driven and climate resilient solutions to the problems arising in agriculture due to changes in the environment and human demand. As such the objectives of this paper are to present the evaluation findings and propose a series of future impacts.

Methods and/or Data Sources

The evaluators reviewed printed and electronic materials during the site visit as they worked closely with the Curriculum Improvement Team and Vice Chancellor and visited with stakeholders (potential employers and program graduates) at a number of public research and training institutions and Lal Teer Seed Limited. On campus, the evaluation team met with BSA students and faculty, observed BSA courses in session, visited agronomic and computer laboratories, and examined library resources. The goal of the evaluators was to provide a valid description of program performance (Rossi, Lipsey, & Freeman, 2004). The evaluators established information adequacy (feasibility, utility, accountability, and propriety) for their recommendations using standard procedures in the literature (Fitzpatrick, Sanders, & Worthen, 2011).

Results

In terms of findings, there is a need for BSMRAU to adopt a Learning Management System (LMS) and provide support for online delivery of web-supported courses and integrate social media. BSMRAU has a stable supply of electricity and access to dependable high-speed Internet. Generation Z students prefer social media, media integration, and real time content (Seemiller & Grace, 2016).

The BSA should transition from a ‘fixed’ B.S. model to a variable model. This would allow students flexibility in tailoring their coursework to align with their career goals. The faculty should segment the BSA into three options with a common core. One option should focus on research, the second on extension, and the third on entrepreneurship education (EEd).

The degree should be redesigned with a program core and a list of directed electives. Four new courses should be developed and four (selected by the faculty) should be deleted from the inventory. The following upper division courses were recommended for the research and extension options: advanced climate change, biodiversity, organizational leadership/team science, and senior seminar (intercultural communications, resume development, job interviewing skills).

A study abroad for variable credit should be added and offered as a directive elective for students in all degree options. Regionally appropriate study abroad opportunities offer student benefits when they are coordinated with the other parts of the curriculum (Bok, 2006). Finally, an internship should with variable credits.

There is a need for students to improve their English writing skills. Consequently, a series of Writing Intensive (WI) courses should be developed and required throughout the program. These would require that students write often and receive critical review. Rubrics should be developed to provide timely and detailed feedback (Stevens & Levi, 2005). Well-designed
rubrics make learning explicit by communicating the instructor’s expectations in advance (Ambrose, Bridges, DiPietro, Lovett, & Norman, 2010).

In terms of outputs, in six months the faculty should develop an internship policy, a series of policies regarding the adoption of a LMS, a study abroad policy, and a WI policy to ensure uniform delivery. Within one year, the research and extension options should be implemented, directive electives with internship and study abroad options should be identified, a LMS should be adopted, WI courses modified, and new courses should be developed as specified above. Within two years, the EEd option should be fully developed and 25% of the courses should be offered through hybrid delivery. Five year outcomes include an increased demand for all graduates, and a cadre of entrepreneurs establishing new businesses throughout the country.

Conclusion

In conclusion, the redesign of the BSA was launched internally in 2015 and reviewed externally in 2016. Collaborative academic change includes “shifts in power, authority, status, and decision making” (Cheldelin, 2000, p.59). It clearly appears that BSMRAU is well on its way to transformative change through its “compelling vision for excellence in undergraduate education and a relentless focus on student learning” (Felten, Gardner, Schroeder, Lambert, & Barefoot, 2016, p.145).

References


Are Village Extension Agents Efficient? Evidence from Katsina State, North West Nigeria

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Keywords: extension agents, efficiency, Katsina, Nigeria

Introduction
Ensuring adequate and sustainable food production system requires an important contribution from agricultural extension and research (Bindlish and Evenson, 1997). Similarly, the availability of relevant proven technology and useful information no doubt is an ingredient for any meaningful agricultural production system (Mijindadi, 1993). Through the training and visit (T and V) system of extension, better production methods and new technologies are being introduced to farmers at the field level (Benor, Harrison and Baxter, 1984). Village Extension agents (VEAs) gradually disseminate technological packages to farmers, focusing on a few simple message on each visit (Ogunwale, 2003). However, Mokone and Styre (2005) opined that the extension services in many developing countries including Nigeria have been criticized for not being able to bring about the necessary change in the farming populace especially the rural and resources poor. It is even worse since 2013 when the Agricultural transformation Agenda was initiated by the Federal Government of Nigeria and value chain agriculture was adopted. This is because majority of the extension workers are trained to provide advisory services on production agriculture alone and as such faced with problems that need to be dealt with in order for them and extension as a whole to be effective and efficient for value chain agriculture. Determining the technical efficiency of extension personnel especially at the village level is therefore paramount if a resilient and sustainable food production system along entire value chain must be built.

Technical efficiency is the effectiveness with which a given set of inputs is used to produce an output. However, in this study, it refers to the ability of an extension agent to perform deliver the required job functions or outputs timely and adequately subject to the availability of necessary job enhancing inputs such as trainings, office facilities, and regular or prompt payment of salaries. A VEA is said to be technically efficient if he or she produces the maximum level of job output from the minimum quantity of inputs. Leta, Murray Prior and Rola-Rudzen (2005) reported that agricultural extension workers are not performing their roles efficiently and effectively due to a number of reasons namely: poor remuneration, oppressive authority, inadequate infrastructure, unclear job direction, geographical condition, and bureaucracy. These problems hinder extension workers in the performance of the work, which ultimately leads to poor performance and low efficiency.
Purpose and Objectives

The objectives of the study were to: (a) describe the personal characteristics of VEAs, (b) estimate the technical efficiency of VEAs, and (c) identify the determinants of technical efficiency of VEAs.

Materials and Methods

Random sampling was used to select 80 VEAs out of the 121 currently employed at Katsina State Agricultural and Rural Development Authority (KTARDA) in Katsina State, Nigeria. A structured questionnaire was used to obtain information on the personal characteristics and job-related activities of VEAs such as the number of farmers covered, number of management training plots established and the number of trainings received to date. Data were collected by trained enumerators in July 2016. The personal characteristics of VEAs were described using descriptive statistics. An input oriented variable returns to scale (VRS) Data Envelopment Analysis model was used to estimate technical efficiency of VEAs. The envelope form of the input-oriented VRS model, which is most widely used as specified according to Coelli, Rao, O’Donnel and Battese (2005) as well as Sharma, Leung and Zaleski (1999). A two-limit Tobit model (Rosett and Nelson (1975) was used to identify the determinants of technical efficiency of village extension agents.

Results and Conclusion

The findings of the study indicated that 32.1% of the VEAs were aged between 38 and 45 years with a mean age of 41 years; while 50.6% were holders of national diploma certificates. The monthly income of a VEA ranged between ₦15,000 to ₦20000. The estimated technical efficiency scores revealed that 19% of the village extension agents have technical efficiency clustering between 80 and 100%, while the average efficiency score was 39%. About 10% of the sampled VEAs were technically efficient (i.e., with technical efficiency score of unity or 100%). This implies that majority of village extension agents were not technically efficient. The results further revealed that age of VEAs (P<0.10), education (P<0.10), income (P<0.01), and number of training received (P<0.01) were significant factors that influence the technical efficiency. All the significant variables had the expected positive sign for their coefficients. Hence, these are the relevant policy variables that could be manipulated to enhance the efficiency, and potentials of VEAs. The length of stay in current station had the expected positive sign for its coefficients but not significant in influencing the level of technical efficiency. In terms of the marginal effects, the age of the VEAs, level of education and income are the most important among the significant explanatory variables that would increase VEAs’ technical efficiency by 3.0%, 4.2% and 6.2% if increased by 100%. The positive sign for age implies that the older and more experienced VEAs were more technically efficient. The positive sign for education implies that a higher educational level will lead to increased technical efficiency of VEAs. The sign of the coefficient for income of village extension agents was also positive and significant, implying that increasing the salaries of VEAs can lead to greater efficiency in extension service delivery. We concluded from the findings of the study that the VEAs in the employment of KTARDA were not technically efficient in the performance of their job.

Recommendations and Educational Importance

Based on the findings of the study, it is recommended that regular trainings of VEAs need to be taken more serious and their salaries and allowances should be paid promptly and...
regularly. It is expected that the study will add to the library of studies that assessed the technical efficiency of VEAs as well as serve as basis for further studies on the aspects of technical efficiency that need to be improved especially in a value chain and ICT driven agricultural extension and rural advisory service currently being implemented in Nigeria. The report of this study will inform the new curriculum being developed for training mid-career extension workers by the Department of Agricultural Economics and Extension of the Federal University Dutsinma, Katsina State Nigeria.

References


Assessing and Enhancing the Capacity and Functionality of the District Agricultural Extension Services System (DAESS) in Malawi

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Keywords: participatory governance, stakeholder panels, extension services, capacity and functionality assessments, Malawi.

Introduction / Theoretical Framework / Review of the Literature

Policy-makers, development practitioners and scholars advocate for the implementation of participatory institutions across the world. Participatory governance can foster empowerment from below, increase accountability, improve government responsiveness and deliver better public services (Schneider, 1999; Speer, 2012). That is, participatory institutions give citizens the opportunity to get involved in decision-making processes, access information and communicate needs. This involvement can then translate into responsive public services and accountable relationships.

In the context of agricultural extension services, participatory approaches can serve as the mechanism to make these services demand-driven and farmer-oriented. For many, the need to bring these changes to extension services is essential to improving service quality and addressing widespread issues (e.g., lack of funding and political commitment, low staffing and inadequate training) (Anderson & Feder, 2004; Birner & Anderson, 2007; Tendler, 1997). Yet, little evidence exists on the extent to which the adoption of participatory governance translates into farmers’ participation and better developmental outcomes. Moreover, despite some works analyzing participatory institutions in agriculture and other areas (Boulding & Wampler, 2012; Ragasa, Badibanga & Ulimwengu, 2016; Devas & Grant, 2003; Lund & Saito-Jense, 2003; Resnick & Birner, 2010; Sheely, 2015), much remains to be learned on how to make participatory governance work for farmers and support resilient food system.
Purpose and Objectives

This paper analyzes participatory governance in agricultural extension services in Malawi. In this country, the District Agricultural Extension Services System’s (DAESS) implementation guidelines demand the creation of participatory committees at different levels (village, area, district and national). In spite of these guidelines, it is unknown whether these extension platforms are even functioning. Thus, the purpose of this paper is to assess the capacity and functionality of three participatory institutions within the Malawi’s agricultural extension services system: the District Agricultural Extension Coordination Committees (DAECCs), the District Stakeholder Panels (DSPs), and the Area Stakeholder Panels (ASPs).

In doing so, we evaluate the extent to which the DAESS meets its four objectives of 1) organizing farmers’ agricultural needs, 2) pooling service providers and related resources in order to address prioritized farmers’ agricultural needs, 3) instilling a sense of ownership and self-reliance in agricultural programs among farmers, and 4) fostering coordination among stakeholders in service provision.

Methods and/or Data Sources

In order to assess the capacity and functionality of the DAECCs, DSPs and ASPs, we conducted an original data collection during the month of September 2016. Participants in this study were the members of the 130 ASPs, 10 DSPs and 10 DAECCs in 10 Districts of Malawi. These 10 districts are the 10 Feed the Future Districts as designated by the United States Agency of International Development (USAID). With an initial goal of five respondents per extension platform, the sample targeted members in different positions including the chair, the secretary, the treasurer, and a male and a female farmer in order to gather diversity and various points of view. When some of these members were not available, the enumerators interviewed alternative ones such as the vice chair and the vice secretary but always pursuing diverse respondents. The final convenient sample includes 721 respondents from 130 ASPs, 10 DAECCs and 6 DSPs.

Moreover, participants answered a variety of open and closed-ended questions during individual face-to-face interviews that lasted for about an hour. The survey instrument captures the workings of the DAECCs, DSPs and ASPs in different areas and thus allows evaluating these platforms in terms of functionality as well as with respect to governance, management, technical and financial capacity. We also use these data to estimate the extent to which the DAECCs, DSPs and ASPs meet the four above-mentioned objectives.

Results, Products, and/or Conclusions

Our study finds that an extension services system is currently in place since ASPs, DSPs and DAECCs exist in almost all of the 10 districts. Nonetheless, the data also show substantial variation when it comes to functionality assessment values and different capacity scores. That is, while some extension platforms perform relatively well in functionality and capacity, others perform relative worse and even report very low values. The existence of these low performing platforms, therefore, weakens overall DAESS’ performance and hinders its ability to organize farmers’ agricultural needs, coordinate service providers and address farmers’ priorities. In addition, the analysis indicates that the DSPs are the weakest part of the DAESS system, while DAECCs report the strongest functionality followed by the ASPs.

When exploring the link between capacity and functionality, results suggest that governance, technical and management capacity are positively and strongly associated with higher functionality levels. This result holds across ASPs, DSPs and DAECCs. Interestingly,
financial capacity does not show a strong association with functionality and in general tends to be quite low across the different extension platforms. Certainly, this analysis does not establish a causal connection between capacity scores and functionality levels. However, it provides a starting point to understand what processes within the ASPs, DSPs, and DAECCs can positively be associated with better functionality.

**Recommendations, Educational Importance, Implications, and/or Application**

This assessment is necessary to identify ways to improve these participatory institutions and strengthen the DAESS in Malawi. Particularly, the analysis indicates that working with extension platforms in strengthening their governance, technical and management processes is a potential first step to increase functionality and deliver better extension services to farmers. The authors, as part of the Feed the Future Malawi Strengthening Agricultural and Nutrition Extension Services (SANE) project and in collaboration with the DAESS, will be working on designing interventions to help the DAESS in its functions of enabling farmers to organize their agricultural needs and coordinating extension service providers to address agricultural priorities. This research, therefore, helps to understand not only the workings of participatory institutions, but also how to leverage these participatory institutions for the benefit of farmers. More broadly, this study contributes to implementing agricultural development strategies and building a sustainable and resilient food system in Malawi.

**References**


Assessing Outcomes from an Agriculture/STEM Youth Camp Using Mixed Methods Evaluation

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Keywords: Mixed-methods evaluation, innovative evaluation methods, group mapping, participant-observation, youth education

Introduction
Agriculture clearly impacts a country’s general welfare and standard of living, contributes to Gross Domestic Product, employs workers, and reduces poverty and improves food security (Leising, Pense, & Portillo, 2003; Economic Research Service, USDA, 2015; Diao, Hazell, & Thurlow, 2010; Food and Agriculture Organization, 2009). Yet, much of the American general public is unaware of the basics of the food system (National Research Council, 1988) and about the significance of agriculture to the nation’s economy, human and environmental health (California Department of Education, 2005). An average American’s agricultural and environmental awareness and literacy are low (Glassman, Elliot, & Knight, 2006; Cassell & Nelson, 2010).

Holz-Clause and Jost (1995) stated that cultivating interest in agriculture among youth can lead to a more agriculturally aware society and a workforce to support agricultural practices that can sustain communities. It is important for youth to learn about aspects like agricultural technology in addition to production agriculture (Luckey et al., 2013). Understanding the significance of agricultural education among youth, and acknowledging that perceptions are solidified at a young age (Holz-Clause & Jost), a week-long residential 4-H Agriculture/STEM camp was offered to middle school students. The camp focused on promoting a systems understanding of how the different components such as plants, animals, humans, soils, water, technology and energy worked together as a system on the farm.

The camp was evaluated using a utilization focused evaluation design. Cousins and Whitmore (1998) indicated that engaging stakeholders in the evaluation process enhances the relevance, ownership and utilization of an evaluation. With this in view, the project evaluation plan was developed in consultation with the team that consisted of 4-H youth development educators, and state level specialists in STEM education and technology. The evaluators participated in all the relevant team meetings to understand the context and help guide the team to develop big picture evaluation questions and learning objectives which lead to proper data collection methods and questions. A mixed-methods design was adopted to evaluate this camp,
as collecting evaluation data using different methods strengthens program evaluation (Patton, 2002).

**Purpose and Objectives**

The purpose of the camp was to promote understanding of the connections among the various components on a farm. This evaluation study had the following specific objectives:

1. To assess students’ understanding of how the different components (plants, animals, humans, soils, water, technology and energy) worked together as a system on the farm.
2. To measure the change in knowledge and skills of students on different aspects related to agriculture after participating in the camp.

**Methods**

A variety of methods such as group mapping, participant-observation, student oral presentations, and end-of-camp surveys were used to collect evaluation data. For the group mapping exercise, 11 evaluation criteria were developed to rate students’ understanding of the systems concept. The criteria were rated on a scale from “0= Not at all……….10= Completely”. Students were divided into five cooperative learning groups, and asked to draw their understanding of how the different components worked together as a system on the farm. Two half hour sessions were provided on all five days of the camp towards this mapping exercise. Student groups used the same chart paper on all days of the camp and kept improving or changing the visual depiction of their understanding. The evaluator and the project director evaluated the group maps at the end of each day. Their inter-rater reliability as indicated by a Cohen’s Kappa value of 0.417 at the end of Day 1 was considered not acceptable, and the two raters clearly discussed where they differed and established a common understanding.

The evaluator actively participated and observed the entire camp experience, which included group presentations by students on the last day of the camp. Patton (2015) stated that evaluators’ understanding of the program is enhanced when they attend and observe the programs, and systematically document what they observe. The team developed a structured observation guide which allowed for focused and systematic observation of the camp. Additionally, a survey was administered at the end of the camp to measure the self-assessed knowledge and skill gain of students on a five-point Likert type scale using retrospective post-then-pre format. Twenty-seven of the 29 students that attended the camp filled out the survey.

**Results**

**Objective 1**

All five student groups showed significant improvement from Day 1 to Day 5 on visually depicting the relationship between animals, plants, water, soils, technology and energy, and how these components work as a system on the farm (Fig 1). Results from ANOVA analysis conformed to these results showing statistically significant improvement of mean scores on all the 11 evaluation criteria covered on grading sheets from Day 1 to Day 5.
Objective 2

There was an increase in the number of students who self-assessed their knowledge and skill levels highly (using the indicator of the top two Likert scale categories: basic understanding + knowing a lot) on all questions from before to after attending the camp. This increase was more pronounced on knowledge questions than on skill related questions. Smaller increases of ≤25 percentage points from before to after attending the camp were achieved for about half of the skill questions, whereas larger increases (≥25 percentage point differences) were observed on almost all of the knowledge questions.

Implications

The use of mixed-methods design allowed evaluators to triangulate data and be confident about the results. Innovative methods like group mapping allowed assessing the outcomes in a way it was fun for students. Camp leaders observed that time spent on the evaluation activity reinforced student learning, meaning that the evaluation actually helped the project achieve its goals. The rating scores of these maps were analyzed quantitatively which further validated the visual depictions. Youth educators and evaluators can better tell the stories of their programming and also improve their programming from adopting mixed- and innovative evaluation methods such as the ones detailed in this study.

References


Building a Sustainable Agricultural Production System Through Growth Enhancement Support Scheme: A Case of Kwande Local Government Area in Nigeria

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Introduction
Agriculture is a major occupation in Nigeria, but the sector has been bedeviled with several challenges, principal of which is related to availability and accessibility of the inputs required for production (Oni, 2013). While availability of agricultural inputs is a problem, ability of farmers to access same is another challenge (Nchuchuwe and Adejuwon, 2012). The Growth Enhancement Support Scheme (GESS) was introduced in 2012 by the Nigerian government to facilitate the distribution of agricultural inputs to farmers using the e-wallet platform (Tiri, Ojoko and Aruwayo, 2014). The expectation is that GESS would enhance the production capacity and yield of the farmers all over the country (Nigeria), with full commitment of the three tiers of government, viz Federal, State and Local Councils. After four years of launching the scheme, it is necessary to assess the scheme and identify the challenges that farmers have with the operation of the scheme.

Purpose and Objectives
The study was carried out to assess the Growth Enhancement Support Scheme in Kwande Local Government Area of Benue State, Nigeria. The specific objectives of the study were to:
1. determine farmers level of participation in GESS;
2. find out farmers’ attitudes towards the scheme;
3. assess farmers’ perceived effect of GESS on their level of agricultural production and standard of living;
4. identify challenges associated with the use of e-wallet platform of GESS.

Method of Data Collection and Analysis
The study was carried out in Kwande Local Government Area of Benue State, Nigeria. Benue State is located in the Middle belt of Nigeria, also known as North-Central Nigeria. Farmers in the Local Government area that registered for the GESS formed the population of the study. Primary data were used for the study, and were collected using a structured questionnaire. The sampling frame of the study was obtained from the Federal Ministry of Agriculture and Rural Development, out of which a sample of 148 respondents were selected using simple random sampling technique, representing 7% of the population. The research instrument (questionnaire) was tested for validity and reliability and confirmed suitable.
The data obtained were analysed using descriptive statistics. The level of participation, attitude and level of effect of GESS on agricultural production were measured using a Likert-type scale. Farmers’ attitude towards GESS was measured on a 4-point Likert type scale with responses ranging from “Strongly agree” (assigned a score of 4) to “Strongly disagree” (assigned a score of 1). The scores were reversed for negative statements. Farmers’ perceived effect was measured on a 4-point scale with responses ranging from “No effect” (assigned 0) to “Great effect” (assigned 3).

Results

It was found that 50% of the respondents had moderate level of participation in the Growth Enhancement Support Scheme. About 43% of the respondents had high level of use of mobile phones. Nwalieji, Uzuegbunam and Okeke (2015) also found rice farmers in Anambra State, Nigeria to have an appreciable level of participation in the GESS.

Research findings on the farmers’ attitude towards e-wallet platform of the scheme revealed that farmers felt neglected at the planning stage of the programme ($\bar{X}=3.1$). The farmers were of the opinion that the programme had reduced corruption in the supply and distribution of farm input to farmers ($\bar{X}=2.8$), and sustenance of the programme would lead to improvement in the country’s agricultural production and food security of the nation.

The effect that the scheme was perceived by the farmers to have on the participants is mostly in their access to farm inputs for production ($\bar{X}=2.21$). Nwaobiala and Ubor (2015) also found the GESS to increase the access of farmers in Imo State, Nigeria to improved seeds and fertilizers. The major challenges associated with the operation of the GESS were high transaction costs incurred by the farmers ($\bar{X}=2.4$), delay in delivery of mobile alert messages ($\bar{X}=2.4$) and late supply of inputs ($\bar{X}=2.3$). Suresh, Kwabena, Manson and Hyacinth (2014) reported that farmers in Nigeria had issues with late arrival of farm inputs and mobile alert messages. The poor state of communication (GSM) infrastructure in the study area could be responsible for the delay in the delivery of the messages to the recipients, while bureaucratic bottle-necks could be responsible for the delay in the delivery of inputs to the farmers.

Conclusion

From the foregoing, it can be concluded that farmers in Kwande Local Government Area of Benue State, Nigeria had appreciable level of participation in the Growth Enhancement Support Scheme. They, however, felt neglected at the planning stage of the scheme. They attested to the fact that the programme had reduced the level of sharp practices in the supply of agricultural inputs to farmers. The scheme facilitated farmers’ access to agricultural input, including improved seeds.

The general conclusion/implication of the study findings is that the Growth Enhancement Support Scheme of the Agricultural Transformation Agenda in Nigeria is on course as a priori expectations are being met. However, there are few challenges that need to be addressed. The major challenges associated with the use of the e-wallet platform were identified as high transaction costs incurred by the farmers, late arrival of mobile alert messages and inputs.

Recommendations

The findings of this research necessitated the following recommendations:

1. farmers should be consulted and included in the planning and execution of the scheme for its sustenance.
2. required infrastructure for effective communication should be provided by GSM service providers.

3. the cost incurred by farmers, especially with regard to the use of mobile phones should be reduced to the minimum by GSM operators in order to encourage their participation in the scheme.

4. the bureaucratic bottle-necks associated with the delay in delivery of inputs to farmers should be addressed by the appropriate authorities.

References


Challenges and Opportunities for Afghanistan’s Agricultural Extension System: Results from a Participatory Evaluation of Institutional Capacity

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Introduction
Agriculture in Afghanistan, the country’s dominating sector employing nearly 80% of the population and accounting for over half of the gross domestic product, has suffered from nearly three decades of war and unrest (Kawasaki, Watanabe, Suzuki, Nishimaki, & Takahashi, 2012). Central to the strengthening of the agriculture sector in Afghanistan is rebuilding the capacity of agricultural research and extension systems (Miller, 2006). Investments in public extension capacity building have been substantial in Afghanistan, especially from international donors (Kock, Harder, & Saisi, 2010).

As one such effort, the United States Agency for International Development’s (USAID) Afghanistan Agricultural Extension Project (AAEPII) is led by University of California at Davis in partnership with Texas A&M University, Washington State University, University of
Maryland, and Purdue University. AAEPII aims to build the capacity of Afghanistan’s public extension system in cooperation with the Afghan Ministry of Agriculture, Irrigation, and Livestock (MAIL) to ultimately increase household income, nutrition, and women’s access to extension services. AAEPII supports MAIL in developing regional training centers called Provincial Model Teaching Farms (PMTF) and trains extension agents to extend the knowledge gained through applied research and training to farmers at the local level using a Farmer Field School model (FFS).

**Purpose and Objectives**

Utilizing participatory methods to conduct an evaluation of institutional capacity, this study sought to identify the perceived obstacles facing the MAIL extension service’s ability to transfer knowledge, skills, and technologies to farmers as well as proposed solutions to these obstacles. Specific objectives include:

1. Describe the perceptions of extension personnel, ministry leaders, and farmers in Afghanistan regarding the most significant obstacles to extending knowledge, skills, and technologies from PMTFs to farmers and;
2. Describe opportunities to address these specific challenges.

**Methods**

This exploratory study utilized an iterative qualitative research design (Shields & Rangarajan, 2013). The setting of this study was the Fourth Annual National Extension Conference. The study purposively sampled conference participants ($n=400$) based on the objective of the study and the relevance of participant’s job roles to the study (Lincoln & Guba, 1985). Sampled participants included ministry administrators, extension personnel from various departments at the provincial and district levels, lead farmers, and university faculty from fifteen of thirty four provinces.

Shinn, Ford, Attaie, and Briers (2012) indicated one product of the participatory process is trusting relationships that develop between interviewers and interviewees while Brunner and Guzman (1989) advocate for participatory evaluation to empower program stakeholders. Using open-ended qualitative-type questions, project staff facilitated small group discussion and voting to allow participants to identify and prioritize significant obstacles. Interviewers used member checks and respondent validation techniques during the small group interviews to strengthen the accuracy and credibility of responses (Dooley, 2007; Morse, et al, 2002). This initial small group work was followed by a participatory large group data reduction activity. In a culminating plenary session, the results from the small group sessions were combined and consolidated and each of the session’s 400 participants voted individually on the obstacles they perceived to be most significant. In this way, data points were triangulated among each of the small group sessions and central characteristics were converged to improve study trustworthiness (Lambert & Loiselle, 2008). The feedback was analyzed quantitatively to rank the obstacles by perceived significance, as indicated by total votes. A similar approach with the same participants was utilized to brainstorm and prioritize perceived solutions to the top three identified obstacles.

**Results**

Due to the brevity of this abstract, the emerging themes from the qualitative data, namely the three obstacles perceived as most significant, are presented here.
One hundred seventy-six ($n=176$) study participants, 44% of the conference’s attendees, identified insufficient resources among most significant obstacles to extending knowledge and technologies to farmers. Specific resource concerns included: office equipment and space, transportation, operating budgets, communication tools, and field tools for extension workers. Conference participants suggested this obstacle could be addressed through more consistent and purposeful budgeting for these resources by MAIL leadership. Secondly, data indicated that insecurity throughout Afghanistan was among the most significant challenges to extending knowledge and technologies from centrally located PMTFs to farmers at the district level and village levels.

Low technical capacity of extension agents and thus low confidence among farmers in MAIL extension services were also perceived to be among the most significant obstacles. The need to recruit and hire more experienced extension agents from the communities in which they work, potential for public awareness campaigns advertising the services provided by MAIL, and increased budgets for training and professional development were among the emerging themes from the data of perceived solutions to this challenge.

Implications and Recommendations

In assessing the organizational capacity of extension organizations, Swanson and Rajalahti (2010) outline the need to assess the sustainability of financial resources, policy environment, target clientele, and organizational resources in addition to human resources. Similarly, the Behavior Engineering Model indicates that environmental factors such as information, resources and tools, and incentives, and individual factors such as knowledge and skills, capacity, and motives are key to assessing and improving organizational performance, such as the MAIL’s ability to provide services to farmers (Chevalier, 2003).

Data from this study seem to indicate that while technical knowledge and skills of extension personnel are limiting factors, the greatest perceived challenges to providing extension services to farmers are most related to limited resources, an environmental factor. With this in mind, efforts to build extension capacity in Afghanistan should continue to connect technical capacity building efforts such as the USAID AAEPII project to programs working to strengthen the Ministry’s capacity in areas such as procurement and budgeting, recruitment and training, performance and program monitoring evaluation, and program planning. Quite evidently, security is and will likely remain a major obstacle to reaching farmers in certain provinces. Further investigation is needed to assess the effectiveness of FFSs and other extension models in reaching insecure communities. Further study to more comprehensively assess the organizational capacity of MAIL is necessary.

References


Introduction

Gulu Town (Gulu) served as a site of refuge for many during armed conflicts in Northern Uganda from 1986 to 2006 (Branch, 2013). It is estimated the Lord’s Resistance Army (LRA) and other rebel groups abducted thousands of people, killed more than 100,000 other civilians (Dolan, 2009), and displaced many more. In the decade after, internal displacement camps transitioned into sprawling slums with deteriorating social conditions (Branch, 2011, 2013). Much of Gulu’s population today is relatively young and struggling. To address these issues, the Ugandan government created Gulu University (GU) to meet the higher education needs of this formerly embattled region (Mugonola & Baliddawa, 2014). The Faculty of Agriculture and Environment (FAE) at GU attempted to fulfill this mission by adopting an approach emphasizing community transformation (Kalule, Mugonola, Odongo, & Ongeng, 2014). The FAE conceptualizes community transformation as the building of community members’ capacities to transition from subsistence agrarianism to more economically viable livelihoods (Mugonola & Baliddawa, 2014).

One strategy FAE uses to achieve their mission is university-community partnerships (UCPs), which were established to facilitate agricultural students’ attachments (internships) with local farmers, including aspiring extension/advisory service providers. Through this program, students gain practical knowledge while also providing extension services by helping farmers solve agricultural problems with support of GU faculty. Anecdotal evidence describes the program’s successes: participants reported improved community relationships, enhanced practical and problem-solving skills of students, and increasing community cooperators’ earning potential. A need existed, however, to understand the challenges associated with these partnerships.

Purpose

The purpose of this investigation was to situate the challenges of UCPs within the larger debate surrounding GU’s identity, role, and mission in a region striving to recover from armed conflicts.
Methodology/Methods

We conducted a systemic investigation grounded in Stake’s (1995) *instrumental case study* methodology. To increase the likelihood of transferability to other post-conflict contexts and ensure rigor, we nested this investigation in Lincoln’s and Guba’s (1985) four principles of qualitative quality: (a) credibility; (b) transferability; (c) dependability; and (d) confirmability. We used a combination of purposive and snowball sampling procedures to recruit 22 participants (Miles, Huberman, & Saldaña, 2014) directly involved in the program: students, community members, and faculty.

To understand this phenomenon more intimately, the lead researcher was immersed in this attachment program during June and July of 2016. Therefore, he was positioned as a *participant observer* during the peak of the program’s activities. Data were collected from four sources: (a) interviews, (b) archival documents, (c) observation/field notes, and (d) pictures. Data analysis was grounded in Corbin’s and Strauss’s (2015) constant comparative method as we coded, categorized, and created themes. Ultimately, through continuous analysis and data reduction, we derived three empirically saturated themes from the findings.

Results

Three major challenges to sustaining UCPs emerged: (a) resistance, (b) reinforcement of stereotypes, and (c) gender bias. If interpreting these findings through Foucault’s (1972) lens, i.e. Foucauldian discourse theory (FDT), *gender* and *class* seemed to uniquely shape the challenges of the partnerships.

Resistance

Foucault (1972) argued that resistance may be situated in less visible spaces. Therefore, everyday resistance may be *hidden*, *overlooked*, and *obscured* (Foucault, 1972). For example, participants articulated that resistance occurred through actors’ suspicions and skepticism of both university officials and the attachment program in the aftermath of armed conflict. When GU officials introduced the attachment program, many farmers expected to be paid for their participation. A university lecturer explained: “Farmers were scared of [the] conditions but [also] lazy” because of the aid they had received during long periods of displacement.

Reinforcement of Negative Stereotypes

Participants voiced the *difficulties* involved with maintaining the partnerships. At times, the attachment program appeared to reinforce negative stereotypes regarding *agriculture* and the *university*. For example, a student explained some farmers did not view students as knowledgeable about agricultural practices; rather, they were seen as “free labor.” A university official stated “attitude issues” existed on the part of some program participants. He indicated a portion of farmers did not view “students as colleagues.” Conversely, some students considered farmers as “simple and unknowing.” According to another faculty participant, without forming deeper, more close-knit bonds in the partnerships, “opinions never change” for students or their farmer cooperators.

Gender Bias

Through field observations, a pattern emerged of female *silence* and *lack of*
representation in the program. In 2016, only five of the 36 students were female, however, roughly 80% of Uganda’s farmers are women (Bowen, 2015). A participant indicated this was a “concerning trend” in Ugandan society. Further, a student explained that in her family agriculture was regarded as a “man’s work” despite the relatively small number of men employed in farming. Foucault (1972) asserted that silence is often the result of oppression as well as the existing gender rules within a given context.

Conclusions/Recommendations/Educational Importance

By theoretically grounding this study in FDT, challenges (themes) associated with power and privilege emerged as manifestations of the UCPs. The first theme, resistance, demonstrated suspicions voiced by the community’s farmer cooperators regarding their engagement with the program. The second theme, reinforcement of stereotypes, illustrated the partnerships may have unintentionally supported negative stereotypes held by some actors about the other parties involved. These findings provide important insights into the role perceptions play in shaping partnerships. According to Hoyt (2010), relationships are recognized as factors influencing partnerships and must be nurtured continually.

Moreover, the preponderance of female agricultural workers in Uganda (Bowen, 2015) stood in sharp contrast to their participation in the student attachment program, i.e., less than 15%. Participants articulated this was connected to broader social issues that often muted the discourses and opportunities of women. Because their involvement appeared to be underdeveloped and inequitable as compared to males, we suggest university officials design tailored campaigns aimed at promoting more opportunities for women. We also recommend providing training to augment more collaborative, contextually grounded strategies and practices intended to enhance existing UCPs while forging new collaborations with other community actors.

References


Introduction/Literature Review/Theoretical Framework

Grenada has an economy dominated by tourism and agriculture. Agriculture employs approximately 24% of the country’s labor force and contributes approximately 6% to its total GDP. The Grenadian economy is vulnerable to global food prices, high food importation, climate variability, and domestic domination by international corporate agribusinesses (Economic Commission for Latin America and the Caribbean, 2000).

The Ministry of Agriculture in Grenada developed a strategic plan with a mandate of increasing farm productivity and competitiveness of the agricultural sector by improving upon the irrigation infrastructure available to farmers. In 2003, the Irrigation Management Unit was established to meet the growing needs of farmers for irrigation services. However, little is known about the mandate’s effectiveness at increasing the adoption of irrigation technologies.

Rogers (2003) identified several characteristics of an innovation: complexity, compatibility, trialability, observability, and relative advantage. Complexity is the degree to which an innovation is perceived to be difficult to use. The higher the complexity, the higher the learning curve and potential delay in adoption (Veil, 2010). Compatibility refers to how aligned the innovation is with a farmer’s existing values, experiences, and needs. Trialability is how easily an innovation is to try on a limited basis. Experimenting with an innovation can help to reduce uncertainty pertaining to use of a new technology (Veil, 2010). Observability refers to the degree to an innovation is visible to others.

Farmers may vary on their perceptions of a technology. However, relative advantage is a decisive factor in determining adoption of an innovation (Rogers, 2003; Pannell et al., 2006; Veil, 2010). Relative advantage is defined as the degree to which an innovation is seen as better than that which precedes it. Economic profitability is often seen as part of relative advantage since an innovation is not likely to be adopted if the costs outweigh the benefits (Veil, 2010). How potential users perceive the relative advantage and other characteristics of drip irrigation will affect the speed and breadth of adoption.
Purpose and Objectives

The purpose of the study was to explore the adoption of irrigation technologies by farmers in southwestern Grenada. Specifically, the objectives were to describe the rate of adoption of four irrigation technologies and to determine the influence of perceived characteristics of drip irrigation on its adoption and diffusion.

Methods

A causal-comparative design was used. A convenience sample of farmers in southwestern Grenada was selected (n = 60) by accompanying the local extension officer during routine farm visits. Data were collected by orally administering a questionnaire adapted with permission from Rodriguez (2015) asking the respondents about various irrigation practices, crops, demographic information, and perceptions of the characteristics of drip irrigation. Responses were hand-recorded and entered into SPSS for data analysis. Most farmers had either a primary (47%) or secondary (30%) level of education. On average, farmers were 53 years old and had approximately 22 years of farming experience.

Descriptive frequencies were calculated and a binary logistic regression conducted. The dependent variable described farmers’ adoption of drip irrigation. Five characteristics of the innovation were assessed: (a) trialability, (b) complexity, (c) observability, (d) relative advantage, and (e) compatibility. Respondents were required to indicate the extent to which they agreed or disagreed with individual Likert-type statements related to each construct. Following, an index for each construct was calculated and converted to dummy variables such that a value of “1” indicated high degree of favorability and “0,” low favorability. The odds of adoption given each independent characteristic was presented in terms of predicted percent based on results of the logistic regression.

Results and Conclusions

Drip irrigation was adopted by 35% of farmers. Others technologies utilized were sprinkler (42%) and surface irrigation (13%). Irrigation technologies were common yet many farmers were still relying upon less efficient irrigation options.

Results of the logistic regression are presented as predicted percent of adoption in Figure 1. As shown in Figure 1, complexity had a significant and strong impact on predicted adoption. When drip irrigation had a high degree of favorability with respect to complexity (i.e. easy to understand), predicted adoption rate was estimated at 94%. However, only a minority of farmers reported a high degree of favorability in the complexity of drip irrigation (23%), which may account for the low reported adoption rate. In contrast, relative advantage had a positive impact on drip irrigation adoption. When there was perceived to be a high degree of relative advantage, the predicted adoption rate was estimated at 62%. Additionally, 73% of farmers reported drip irrigation had a high degree of relative advantage over previous irrigation practices.

Compatibility also positively impacted the adoption rate of drip irrigation. When there was a high degree of compatibility, the adoption rate was estimated at 59%. Most farmers (83%) stated drip irrigation had a high degree of compatibility with their farming system.

Trialability and observability perceptions had less impact on adoption of drip irrigation. When trialability was perceived favorably, the predicted adoption rate was approximately 22%. However, only 23% of farmers indicated a high degree of trialability. This suggests most farmers were unable to experiment with drip irrigation before making a decision to adopt. When there
was a high degree of observability, predicted adoption was estimated at 43%. Most farmers (60%) reported a high degree of observability with respect to drip irrigation.

![Figure 1](image.png)

*Figure 1. Predicted adoption of drip irrigation given various characteristics.*

**Implications and Recommendations**

Rogers (2003) theorized relative advantage and compatibility were the most important characteristics of an innovation, yet this study’s findings showed complexity to be critical to the adoption of drip irrigation. Farmers viewed positively the benefits of drip irrigation, felt it was compatible with their farming practices, and could see others using it in their communities but were deterred from adoption by concerns about complexity. The Ministry of Agriculture should pursue strategies aimed at reducing the perceived complexity of drip irrigation. Extension is well positioned to lead such efforts, and in so doing, can contribute meaningfully to increasing productivity for farmers in southwestern Grenada.

**References**


College Students’ Motivations to Study Abroad

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Introduction

Employers in the agricultural and natural resources sectors need employees who possess interpersonal communication and leadership skills (Crawford, Lang, Fink, Dalton, & Fielitz, 2011; Harder et al., 2015) as well as a “good grasp on issues and events that affect things throughout the world” (Irani, Place, & Friedel, 2006, p. 28).

The merits associated with international experiences (Goldstein & Kim, 2006) include acquiring cross-cultural skills and global awareness (Harder et al., 2015; Kitsantas, 2004), increasing geopolitical concern (Carlson & Widaman, 1988), and developing intercultural competence (Rexeisen, Anderson, Lawton, & Hubbard, 2008).

However, limited inquiries measure students’ motivations, including cost, i.e., task effort cost, outside effort cost, loss of valued alternatives cost (LOVA), and emotional cost, for participating in short-term, study abroad courses. Little is known about how expectancy, value (Eccles & Wigfield, 2002), and cost (Flake, Barron, Hulleman, McCoach, & Welsh, 2015) motivate students to participate in such programs.

Theoretical Framework

The expectancy-value theory of achievement motivation (Eccles et al., 1983; Wigfield & Eccles, 2000) framed the study. Within the expectancy-value model, the major outcome component is achievement-related choices.

In previous research, cost in expectancy-value models often has been neglected or ignored altogether (Barron & Hulleman, 2015; Flake et al., 2015). Barron and Hulleman (2015) proposed making cost a major component of expectancy-value models of achievement motivation. Moreover, expectancy-value theories and social cognitive theories should be
integrated to form a comprehensive model of an individual’s perceptions of ability and expectancies for success (Eccles & Wigfield, 2002).

**Purpose and Objectives**

The purpose of this study was to identify the motivations for College of Agricultural Sciences and Natural Resources (CASNR) students at Oklahoma State University (OSU) to participate in short-term, study abroad courses. Four objectives guided this study: 1) Describe the personal characteristics of OSU students who were CASNR majors; 2) Determine the perceived affective factors that motivated students in the CASNR at OSU to enroll in short-term, study abroad courses; 3) Describe the relationships between students’ perceived affective motivations to participate in study abroad courses and their selected personal characteristics; and 4) Describe the relationships between perceived affective factors that motivated students to participate in study abroad courses and overall motivation to enroll in such prior to being graduated.

**Methods**

This descriptive-correlational study included all students in CASNR at OSU during the Fall semester of 2016 \((N = 2,978)\). Students with previous short-term, study abroad experience were excluded from the analysis. The questionnaire used in this study was distributed online using Qualtrics Survey Software in accordance with Dillman’s, Smyth’s, and Christian’s (2009) method for Internet surveys. In all, 529 students responded to the questionnaire for a response rate of 18%. However, after the exclusion of incomplete questionnaires and individuals with prior short-term, study abroad experience, the usable responses were reduced to 219 (7%).

The 38-item instrument used in this study was a modified version of the Self and Task Perception Instrument [STPI] (Eccles & Wigfield, 1995), with reliable post-hoc Cronbach’s alpha scores ranging from .78 (utility value) to .87 (ability- and expectancy-related beliefs); the Expectancy-Value-Cost Questionnaire (Flake et al., 2015), with reliable post hoc Cronbach’s alpha scores ranging from .78 (task effort cost) to .90 (outside effort cost); and items from the social cognitive theory (Bandura, 1986; Bobbitt & Akers, 2013), with a modest post hoc Cronbach’s alpha score of .64 (Warmbrod, 2014).

**Results**

Participants self-reported to be mostly White (73.5%), female (70.3%), undergraduate students. Of the participants, nearly one-third indicated they grew up on a farm or ranch \((f = 72, 32.9\%)\), with only 19 (8.7%) growing up in a downtown area in the city or town. More than three-fourths indicated they were neither transfer students \((f = 165, 75.3\%)\), nor fluent in another language \((f = 170, 77.6\%)\).

Intrinsic value \((M = 4.20, SD = 0.69)\), e.g., the belief a short-term study abroad course would be fun, and expectancy- and ability-related beliefs \((M = 4.10, SD = 0.65)\) and the belief they could do an excellent job were the largest motivation factors. Self-efficacy \((M = 2.83, SD = 0.82)\) was the lowest motivator for students to participate in such experiences.

Bivariate correlation analyses revealed education status and outside effort cost \((r = -.21)\) correlated weakly and negatively. Task effort cost \((r = -.27)\), expectancy- and ability-related beliefs \((r = -.16)\), and self-efficacy \((r = -.16)\) and location lived while growing up also correlated weakly and negatively. In addition, outside effort cost and age \((r = -.17)\) were weakly and negatively correlated.
The point-biserial coefficient correlation revealed the top motivational factors by gender, fluency in another language, and transfer student status. Intrinsic value and gender ($r = .14$) were weakly and positively correlated; self-efficacy ($r = -.14$) was weakly and negatively correlated with gender. Task effort cost and fluency in another language ($r = .14$) were weakly and positively correlated.

Each factor had a moderate to strong correlation to students’ overall motivation to study abroad prior to being graduated, with the exception being self-efficacy. Outside effort cost ($r = .60$) had the strongest, positive correlation to students’ motivation to study abroad. Self-Efficacy had a weak, positive correlation with motivation to study abroad ($r = .15$).

**Conclusions**

The empirical structure of expectancy, value, cost, and self-efficacy remained relatively consistent with previous research (Bobbitt & Akers, 2013; Eccles & Wigfield, 1995; Flake et al., 2015). However, similar to Flake et al. (2015), we gained insight regarding how cost manifests itself in different situations, and how cost interacts with expectancy, value, and self-efficacy among a new population. As expected, the measures of cost were moderately and strongly correlated. Differential relationships were observed between expectancy and value and cost items. After recoding the cost items worded negatively, measures of cost were moderately and positively correlated to expectancy and value, while expectancy and value were moderately and positively correlated to student intent to enroll in a short-term study abroad course before graduation.

**Recommendations and Implications**

The findings of this study point to outside effort cost as the most significant prohibitor to students’ desires to study abroad. It is recommended that students’ motivations be investigated during and after a study abroad experience to determine how they change overtime. In addition, rich, in-depth qualitative research is needed to identify the themes and understand more fully the differences students experience throughout the stages of engaging in short-term, study abroad courses (Flake et al., 2015).

**References**


Crawford, P., Lang, S., Fink, W., Dalton, R., & Fielitz, L. (2011, August 11). Comparative analysis of soft skills: What is important for new graduates? *Michigan State University*


Competency Assessment in Learning Methods: A Study of Agricultural Extension Officers in Jamaica and Tobago

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Keywords: Learning methods competencies, self-assessment, Agricultural Extension Officers

Introduction and Review of Literature

In many Caribbean environments, extension agents see themselves as service providers to clients rather than providers of new educational perspectives using the teaching-learning processes. The agents are wont to interpret their own viewpoint of the teaching-learning process; as a result the quality of correct interpretation is further affected.

Extension must be a teaching-learning process to assist communities in solving problems through improved and relevant education. Therefore, the goal of extension teaching is not only to present information to learners but also to facilitate experiences that will help them gain and master the knowledge and skills they need to learn and practice in life. The decision that a client makes to change a practice is directly related to his/her learning as a result of extension program participation (Pratt and Bowmen 2008).

Extension therefore involves clients in learning activities through various educational programs. Clients’ learning from their participation in such programs largely depends on the extension agent’s competencies to involve them in a successful learning experience. According to Brodeur et al. (2011), extension agents are often hired based on their technical education and are not taught the basic principles of teaching-learning processes in their college degrees. Once hired, they are asked to educate the community on their own. This situation often results in trial and error.

This study explored the self-reported competencies of Agricultural Extension Officers (AEOs) in Jamaica and Tobago with regard to learning methods. These AEOs are the front line workers who provide outreach extension services to farmers. Continuous training of AEOs in
these islands could improve their capacities needed to provide best learning experiences to clients. Liles (2004) stated that to achieve excellence in the workplace requires identifying core competencies of the employees and tailoring those competencies to the professional development training.

The concept “learning methods” presented in this study has been defined as a set of educational procedures that increase the capacity of individuals or groups to acquire and productively apply new knowledge and skills, and to adapt successfully to changes and challenges (Ghimire and Martin, 2013).

**Purpose**

The purpose of this study was to determine the knowledge and skills of Agricultural Extension Officers in Jamaica and Tobago and determine their further training needs in learning methods.

**Methods**

The data collection instrument for this study was a closed-form questionnaire, in which the survey instrument included nine competencies in the area of learning methods. These competencies were measured using a five-point Likert-type scale to identify respondents' level of knowledge and skills and to determine their needs for further training (1 - being very low and 5 - being very high).

The AEOs were purposively selected to serve as the sample for this study. In both islands, a research team approached the participants in-person to administer the survey. Twenty three AEOs in Jamaica and 19 AEOs in Tobago completed and returned the survey with a total response of 42. In Jamaica, the survey was conducted during a week-long training session on Farmer Field Schools where AEOs from various extension districts were assembled. The survey in Tobago was conducted at a regular monthly meeting of frontline extension officers representing all extension districts. Means and standard deviations were computed to identify respondents' competency knowledge and skills and their needs for further training.

**Results**

Table 1 shows that across the listed competencies, the AEOs reported ‘moderate’ ratings for their knowledge and skills and ‘high’ ratings for their training needs in learning methods.

<table>
<thead>
<tr>
<th>Learning Competencies</th>
<th>Knowledge and Skills</th>
<th>Training Needs</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$M$</td>
<td>$SD$</td>
</tr>
<tr>
<td>Identifying factors that influence learning</td>
<td>2.95</td>
<td>1.10</td>
</tr>
<tr>
<td>Recognizing learning styles of clientele</td>
<td>3.02</td>
<td>.92</td>
</tr>
<tr>
<td>Matching learning objectives to individual learning needs</td>
<td>2.93</td>
<td>1.02</td>
</tr>
<tr>
<td>Using principles of adult learning to teach farmers</td>
<td>3.00</td>
<td>1.10</td>
</tr>
<tr>
<td>Creating a motivating learning environment</td>
<td>2.90</td>
<td>1.16</td>
</tr>
<tr>
<td>-------------------------------------------</td>
<td>------</td>
<td>------</td>
</tr>
<tr>
<td>Using techniques to develop problem solving</td>
<td>3.14</td>
<td>1.00</td>
</tr>
<tr>
<td>skills of clients</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Using group learning techniques</td>
<td>2.90</td>
<td>1.03</td>
</tr>
<tr>
<td>Using a learner-centered teaching methods</td>
<td>3.21</td>
<td>1.04</td>
</tr>
<tr>
<td>Match learning to field application</td>
<td>3.07</td>
<td>1.11</td>
</tr>
<tr>
<td>Summated Mean Score</td>
<td>3.01</td>
<td>1.05</td>
</tr>
</tbody>
</table>

*Note: Very low = 1, Low = 2, Moderate = 3, High = 4, Very High = 5.*

### Educational Importance and Implications

Findings of this study have important implications for Agricultural Extension in Jamaica and Tobago. First, self-assessed needs for further training indicate that AEOs would respond positively to professional training. This idea has related implications for developing policies and guidelines in designing trainings as well as for selecting, hiring, and promoting extension staff.

#### International implications

Results of the current study indicated a gap in AEOs knowledge and skills in learning methods. In this context, findings may provide some insight on how the agricultural extension systems in the developing world could provide greater human resource development by enhancing teaching learning capacities of their extension staff. At the very least, this study may entice a change in Commonwealth Caribbean Civil Services as the current training policies do not have mechanisms for training units to be accountable for spending on and assessing the outcomes of, training activities in learning methods (Sutton, 2008).

### Recommendations

This study recommends that the Extension leaders in Jamaica and Tobago design and implement professional development training for AEOs in learning methods. Focus of this training should be for the competencies with the highest mean ratings for training needs as indicated in Table 1.

Possible and flexible staff development programs could be through graduate programs, in-service training, and on-the-job training. An experiential learning approach would enhance employees’ capacity in the teaching-learning processes through in-situ practice and experience. It is also possible that academic extension education programs can continuously review the curricula in order to ensure that future extension staff are appropriately trained. Offering courses on learning methods is therefore recommended.

### References


Coping with Disaster: How Liberia’s Agricultural Actors Functioned During the Ebola Virus Disease

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Keywords: Liberia, disaster response, agriculture sector

Introduction
“Lines of trucks carrying produce to the markets sat immobile at the health checkpoints for four or five days, sometimes longer, their precious cargo slowly rotting. There was nothing to be done; we had to curtail the spread of the disease and the checkpoints were necessary, but they took their toll on the market.” Ministry of Agriculture (MOA) specialist

Liberia is a country of 4.1 million (CIA, 2014) and more than half of the population lives in rural areas, engaging in subsistence agriculture as their primary economic activity (LISGIS 2010). While the sector was devastated during Liberia’s two civil wars, agricultural production was improving and hopes for a promising harvest were high when the Ebola Virus Disease (EVD) outbreak erupted during the ‘lean season’ in 2014. It ruptured the country’s fragile food security through traumatic disruptions in key aspects of the agricultural sector (FSC, 2015).

Purpose
The purpose of this qualitative case study was to explore how the various actors in the Liberian agriculture sector were affected during the EVD outbreak and what strategies they adopted to cope with the destructive fallout of this emergency on their work and personal lives.

Methods
Participants representing production, marketing, transport, policy, and education within the agricultural sector were sought using a purposeful sampling method (Creswell, 2013). A total of 120 participants from eight counties participated. Data was collected using interviews and focus groups. Questions addressed the state of agriculture prior to EVD, how EVD affected agricultural activities, and what coping strategies were employed to mitigate the destructive effects of EVD. Data were analyzed and coded for themes.

Results
Grieving. Not only were participants grieved over the massive loss of life from EVD, but they were also grieved at the magnitude of agricultural losses due to circumstances arising from
the virus. Entire harvests of staple foods were lost in breadbasket counties. A particular sense of
grief among participants came from the belief that the harvest was supposed to be exceptional in
2014, but it was lost due to the devastation of EVD. While participants hoped they could recover,
the weight of grief was profound and difficult to endure.

Fearing. Participants discussed the palpable fear that infiltrated their daily lives as EVD
set in. Rumors and misinformation spread, and farmers abandoned their farms for fear of coming
into contact with animals commonly found in rural areas that might be infected with EVD. Fear
drove the farmers to abandon the ‘kuu’ system, communal labor practiced by farmers, where
friends help to prepare land and harvest crops. The lack of helping hands to harvest crops let to the
spoilage of many crops on the farms.

Participants emphasized the fear of almost all animals during the EVD outbreak. Usually
during the lean season farmers will hunt to supplement their families’ food intake. During the EVD
epidemic, they would not hunt due to this fear, further shrinking families’ available food sources.
Those who had livestock would not eat or sell them as myths about EVD suggested that livestock
transmitted the disease.

Disrupting. Participants spoke of disrupted agricultural market activities. The government
restricted public gatherings and travel within the country. They closed international borders, as
well as borders between counties. They also erected security and health checkpoints at key
gateways to contain the spread of EVD. This affected agriculture in two important ways.
First, at the health and security checkpoints, health practitioners checked every individual’s
body temperature while security personnel restricted movement of people with high temperatures.
This process was excruciatingly long resulting in queues that stretched for kilometers. Trucks
carrying agriculture produce were delayed for as long as five days, causing perishable goods to
spoil. Transporters and middlemen all confirmed that the long queues at checkpoints caused
spoilage of more than 75% of produce headed for markets.
Second, the restrictions led to an increase in prices and eventual shortage of agricultural
products from neighboring countries. This caused a rush on the markets by fearful consumers.
Traders, in anticipation of food shortages, hoarded goods that led to additional hikes in prices. In
desperation some participants ventured to the edges of their farms to harvest tubers of cassava for
household consumption; as food supplies were depleting, some bartered or sold food staples with
neighbors for other foodstuffs or money to purchase medicines.

Coping. As the specter of hunger settled into the country, participants struggled to feed
their families and desperately sought ways to combat starvation. Nearly 80% of the participants
admitted that family members skirted the restrictions on movement and traveled to neighboring
communities in search of work. Some were drawn into the highly stigmatized but nicely
remunerated work of the Ebola burial teams. Others resorted to fishing to feed their families or
sell for cash.

Conclusions and Recommendations

Viewing the agriculture sector of Liberia in the midst of the EVD epidemic sheds light on
both the challenges and opportunities to mitigate the effects of disaster in other emergencies. The
tragedy of rotting harvests both in fields and in trucks while the population faces starvation is
immense.

Public awareness campaigns should be swiftly developed and executed to quell myths
about the spread of disease. This will alleviate the fears spread through inaccurate information
and may prevent panicked decisions to abandon farms and farming practices based on rumors of
danger. Creating a communication plan in times of calm would facilitate the flow of accurate information to the people during emergencies.

The free flow of trucks with agricultural produce must be facilitated. Security and health checks should be done at points of transport origin and passes issued to trucks to ensure the arrival of foodstuffs to markets. The MOA should proactively work with the Ministry of Public Health to create such a ‘pass’ system for implementation in other health emergencies. The MOA should work with other government agencies to set up official centers for trading and bartering where farmers can exchange agricultural goods.

By implementing lessons learned from the EVD disaster, Liberian agriculture will have fewer challenges to face in emergency situations.

References
Creating a Food Security Graduate Certificate for Latin America and the Caribbean: A Critical Action Research

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Keywords: food security, experts, agricultural education, Latin America and the Caribbean, critical action inquiry

Introduction

Food insecurity is a complex global phenomenon that has persisted in spite of targeted interventions (Food and Agriculture Organization of the United Nations [FAO], International Fund for Agricultural Development [IFAD], & World Food Programme [WFP], 2015a). While the percentage of undernourished people in the world has been reduced from 23% in 1990-1992 to 13% in 2014-2016 (United Nations [UN], 2015), there are still almost 800 million people worldwide suffering from hunger (FAO et al., 2015a).

Latin America and the Caribbean (LAC) are one of the most successful regions diminishing the percentage of undernourished people. LAC almost halved the number of malnourished people, and reduced malnourishment from fourteen percent in 1990 to less than five percent in 2015 (FAO et al., 2015b). Despite the overall regional progress, there are still significant differences between countries that need to be addressed (FAO et al., 2015b). Out of the thirty-three countries comprising LAC, nineteen did not accomplish the goal of reducing undernourishment by half. While the region made great advances in reducing food insecurity there is still work to be done (the Economic Commission for LAC [CELAC for its acronym in Spanish], 2013).

One strategy used to address food security is to provide the population with the necessary skills and knowledge (Nordin et al., 2013). IFAD (2010) has suggested that a part of such a strategy would be preparing graduate-level professionals to address the challenges of food security (Nordin et al., 2013). Professionals with knowledge about food security and who are
willing to communicate their knowledge are important for creating awareness on food insecurity issues (Nordin et al., 2013). Classes focused on teaching specific strategies to address food security to graduate students will enable them to be part of the solution and engage them in the decision-making process from their region.

**Purpose of the Research and Objectives**

The purpose of this study was to develop a graduate certificate on global food security for LAC through critical action research.

**Methods**

The study was designed as critical action research due to its application in curriculum development (Ary et al., 2010). Critical action research is a participatory process to understand a phenomenon in a specific context and, as an outcome, produce social change (Mills, 2000). Three phases were used in this study:

**Phase I - Reflect**

The first phase consisted of a literature review (Mertler, 2009) focused on the food security status in LAC and the strategies undertaken by the region to address this phenomenon.

**Phase II – Plan**

Phase two consisted of collecting the information needed (Ary et al. 2010). A three-round-Delphi study was developed to determine the topics and courses for a graduate certificate in food insecurity for LAC (Millares-Forno, Brashears, Sanchez & Brashears, 2015). The Delphi was conducted with experts in food security from the LAC region. This process resulted in a list of eleven courses that LAC stakeholders consider important to address food insecurity in the region.

Fifteen US faculty with food security expertise were asked to review the outcomes of the Delphi Study. A Likert-type scale was developed based on the courses proposed in the second round of the Delphi study by the experts from LAC (Millares-Forno et al., 2015). Faculty ranked 23 courses from 1 = “Not important” to 10 = “Essential.” Following the same criteria used on the Delphi Study (Millares-Forno, et al., 2015), the courses that reached more than 75% of agreement were considered for the certificate.

**Phase III – Act**

Phase three consisted of the plan implementation (Mertler, 2009). The results for phase two were exported to The Statistical Package for Social Science (SPSS®) for analysis. The averages between the results of the Delphi Study and the instrument completed by the US faculty were compared and resulted in the courses and topics to be included in the graduate certificate.

**Results**

US faculty results showed eight courses reached more than 75% of consensus agreement. The courses that reached agreement were “Food Safety” (89.3%), “Food Security Policy” (88.7%), “Human Nutrition” (83.3%), “Sustainability” (83.3%), “Water Issues” (81.3%), and “Introduction to Global Food Security” (80.0%). The results of the US faculty were compared with the results of the Delphi study. The average between the results of the two groups produced a new list of courses to be included in
the certificate. The seven courses that reached the level of agreement by experts from LAC and US faculty according to phase II of the study were “Food Security Policy” ($M = 8.97$), “Food Safety” ($M = 8.86$), “Human Nutrition” ($M = 8.83$), “Water Issues” ($M = 8.37$), “Methods of Analyzing Food Security” ($M = 8.18$), “Introduction of Global Food Security” ($M = 8.17$), and “Sustainability” ($M = 7.90$). These courses included twenty-two topics previously selected by the experts.

Conclusions and Recommendations

These courses and topics should be included in an online graduate certificate focusing on global food security for LAC. The topics and courses selected by the experts cover the four pillars of food security and the priorities for the region (FAO et al., 2015b). Having professionals with knowledge in the four pillars of food security and the four pillars to eradicate hunger in LAC are important to accomplish the goal set up by the region. If professionals understand these courses, they will gain awareness of the challenges and possible solutions to overcome food insecurity.

The study resulted in the approval of the curriculum. The results of the study were shared with faculty and administration and some additional changes were made. Currently, the 12-hour certificate is available for students. Within the certificate, there are two mandatory classes: Introduction to Food Security and Food Security Policy, and four concentrations students can choose within the certificate: food production, program development and analysis, human nutrition, and food safety.

The next step of the critical action inquiry process is to observe the effectiveness of the certificate and make the corresponding changes to improve. The curriculum must be continuously monitored for effectiveness.

References


Designing a Capacity Development Training Focused on Change Theory in Haiti

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Keywords: capacity development, change theory, training, Haiti, facilitators

Introduction

Haiti is one of the poorest countries in the world and the subject of many agricultural development projects. In 2015, the USAID funded a consortium from University of Florida, University of Illinois, and Louisiana State University to build the human and institutional capacity in Haiti to conduct agricultural research and extension. Efforts are underway to develop a capacity development (CD) plan using an agricultural innovation system (AIS) approach (TAP, 2016) based on expressed needs of researchers and Extensionists in Haiti. An AIS approach recognizes the complex interactions and multiple players involved in an agriculture sector (TAP, 2016).

Using a participatory approach and recommendations from Roberts, Thoron, Barrick, and Samy (2008) regarding knowing the potential audience and culture, two of the researchers met with a variety of stakeholders working in education, extension, and the private sector to begin understanding some of the opportunities for CD. The concept of change theory quickly emerged as a need for CD.
Purpose/Objectives

The purpose of this study was to evaluate a CD training focused on change theory for stakeholders working in education, extension, and the private sector in Haiti. The objectives established by the researchers were to (a) design a CD training with appropriate content knowledge focused on change theory and (b) design a CD training with Haitians and Haitian-Americans as the facilitators of the content.

Methods

Based on stakeholder feedback from the initial visit, researchers began to design the content and plan how the content would be delivered. It was determined the initial researchers from the University of Florida would serve as the content experts and provide the curricula for the training. The specific curricula used for the CD training was Everett Rogers’s (2003) Diffusion of Innovations. After the completion of content design, one Haitian graduate student, one Haitian-American graduate student, and the in country Haitian training coordinator were recruited to serve as facilitators of the content. The entire team met several times via Skype before the training held in country May 23-25, 2016.

The method used for delivery was a train the trainer approach. The train the trainer approach was deemed appropriate based on the Developing Well-Prepared Agricultural Workers in International Settings model (Barrick, Samy, Gunderson, & Thoron, 2009). The content experts provided all content and trained the facilitators regarding content and delivery methodologies. Once in Haiti, the facilitators delivered all training content in French to the participants. The content experts assumed a secondary role and answered technical questions that could not be answered by the facilitators. At the conclusion of each day, the team met and reflected on the completed training. The content experts provided feedback to the facilitators regarding facilitation techniques, content knowledge, and schedule.

Results/Conclusions

The pre- and post-evaluation results indicated that participants displayed an increase in knowledge regarding the four key objectives of the training. Participants reported feeling more confident in identifying and implementing strategies for overcoming barriers to change utilizing Rogers’ (2003) model in programing and being a more effective change agent. In addition, more than 97% of all participants agreed Rogers’ (2003) diffusion of innovation model was useful, and 90% intended to implement elements of the model in their work.

The qualitative feedback from participants showed their appreciation for how the training was formatted. Participants appreciated the synergy between the presenters and the collaborative structure of the training. Participants said it was encouraging to have young Haitian students in the U.S who are using their education and formal training to give back to Haiti. A number of participants stated the strategies and pedagogy used to deliver the content made it feasible for each participant to understand regardless of their experience. Having U.S. based faculty train and prepare their students to facilitate the training session is what informed the strategies used in the planning and implementation stages of the workshop; the participants expressed great appreciation for that process and the energy it created during the three day training.

The delivery method of the training was a key factor for participants overall satisfaction with the program. Having content experts supervise and mentor Haitian students in the U.S. to create and deliver content to Haitians was an innovative and effective strategy for the training. Further, the presence of the content experts at the training created a trustworthy environment. As
a result, the depth and breadth of participation was high and very few dropouts occurred. The content experts facilitated daily debriefing sessions to reflect on the presentations, provide feedback to presenters, and make adjustments to the schedule based on their observations and participant concerns. Further, having a very diverse target audience of participants with different levels of education representing different institutions and geographical regions the training facilitated a network for work collaboration between the represented institutions/groups.

**Recommendations/Educational Importance/Application**

Future interventions should consider utilizing the content experts – facilitators training format since it was revealed effective for the planning, designing, and implementation of the training. The preparation of the facilitators through regular planning meetings with the content experts was crucial to meet the intervention’s outcomes. However, it could be more effective if content experts and facilitators would have met face-to-face instead of virtual means only. Opportunities may have been missed to receive instantaneous insights or feedback (in real time) from people on the ground (Haiti) because of technological problems such as video and phone call interruptions. Also, the involvement of the facilitators in the needs assessment prior to the training planning, development, and implementation would have been beneficial for the facilitators and the workshop.

**References**


Effect of Transparency of Key Stakeholders on the Benefits Derived from the Third National Fadama Development Project in Osun State, Nigeria

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Keywords: benefits, stakeholders, transparency, sharp practices

Introduction / Theoretical Framework / Review of the Literature

Agricultural and rural development programs in Nigeria have merit on paper, however, none has achieved the desirable effect to any significant and sustainable extent as the country still faces huge food security challenges (Idachaba, 2000). The National Fadama Development Project is one of the agricultural programs in Nigeria which has successfully transcended successive governments. It is characterized by flexibility of farming operations, low inputs requirement, high economic values, as well as minimal social and environmental impact, hence conforms to the general criteria for sustainable development (Akinbile, Ashimolowo and Oladoja, 2006). The project has spanned almost two decades with increased rural income and poverty reduction central to its main goal, yet, high level of poverty is still prevalent in Nigeria especially in rural areas as indicated by the Multidimensional Poverty Index of 0.240 for 2014 (Oxford Poverty and Human Development Initiative, 2014).

Insufficient farm inputs, lack of access to agricultural information, overdependence on international donors, and poor extension agent-to-farmer ratio are some of the constraints to agricultural development in Nigeria (Yusuf, 2013). However, much of these problems can be traceable to the corrupt tendencies of some stakeholders in the agriculture sector (Bawa, Ali and Nuhu, 2010). According to Idachaba (2014), corruption is evident in how public sector appointments have been influenced by politics, personal preferences and trading of loyalties, resulting in the wide gaps between the loud promises and the endless stream of failures of public sector projects.

However, while corruption has been widely regarded as the root cause of many ills in Nigeria, corruption studies are relatively few and those specific to the field of agriculture are even fewer. On the scope of agricultural extension researches, targeted at causes and solutions to the long drawn menace of poverty, food security and low agricultural productivity, it has been found that while some factors are being over-stretched, some ‘non-research’ factors are not investigated at all (Ladele, 2010).
Purpose and Objectives
The purpose of this study was to determine what influence sharp practices had on the successful implementation of the National Fadama Development Project. The specific objectives were to:

1. Identify the benefits derived by beneficiaries of the project.
2. Examine the reasons why the project has not had the desired effect.
3. Determine the effect of sharp practices on the benefits derived from the project as perceived by the beneficiaries.

Methods
The study was carried out in Osun, a south-western state in Nigeria. Structured questionnaires were used to elicit information from Fadama Project beneficiaries (N = 126) who were selected using multistage sampling procedure. In-depth interviews and focus group discussions were also conducted for Fadama officials and Fadama Users Groups respectively. The questionnaire measured characteristics of the Fadama Users Groups, the benefits derived from the project, factors limiting the desired effect of the project and the perception of the beneficiaries on how sharp practices affected the benefits they derived from the project. Data were analyzed using PPMC, ANOVA and regression analysis at p=0.05.

Results
Majority of the respondents (82.5%) belong to groups having 10-12 members, held meetings fortnightly (42.1%), and executed one sub-project (65.9%). While 83.3% were involved in the need identification process for their groups, only half were involved in the selection of service providers. The majority of respondents (88.9%) saw an increase in productivity of their major agricultural enterprise 84.9% of them recorded an increase in their income, which translated to improved savings, and 78.6% of the beneficiaries were able to cater for their children’s education through participation in Fadama III project. Results indicated a significant difference in the benefits derived by different Fadama user groups (p=0.004). The livestock groups derived the most benefits (mean=12.694) while crop farmers derived the least benefits (mean=9.980) from the project.

Untimely, disbursement of funds, lack of ready markets, and sharp practices were ranked first, second, and third respectively as the major constraints to the effectiveness of the project. Interviews with Fadama officials revealed that sharp practices such as presentation of fake bank accounts and diversion of inputs or project funds where perpetuated by the beneficiaries of the project. Focus group discussions also revealed that procurement of inferior inputs and shortage in inputs supplied by service providers occurred during the project.

The perceived effect of sharp practices on the benefits derived from the project was generally unfavorable as 51.6% of the respondents adjure to this. Regression analysis showed that sharp practices reduced significantly (p-value = 0.000, R²=0.241), the benefits derived by beneficiaries of the project in the study area. Collusion and diversion of funds/inputs were significant predictors of the variation in the benefits derived from the project.

Conclusions and Recommendations
The results of this study indicate that majority of the respondents derived some benefits from the Fadama III project, however these benefits were significantly reduced by sharp practices. This implies that the project’s ineffectiveness can be traceable to the occurrence of
sharp practices during its implementation. Other constraints encountered by beneficiaries include lack of markets and untimely disbursement of funds.

It is paramount therefore to check thoroughly for loopholes in agricultural policies and programs that create opportunities for sharp practices while ensuring that these policies are implemented in a corruption-free environment. Efforts should also be made to ensure timely disbursement of project funds and equitable distribution of project benefits in order to encourage active participation and performance of the different categories of beneficiaries. Furthermore, beneficiaries of agricultural programs should be assisted in the sale of their produce/products at competitive market prices, as an incentive for increased production.

**Definition of Term(s)**

*Sharp practice:* is a subset of corruption which may include bid-rigging, inflated costs, trickery and influence peddling. It could also be the exploitation of a system to secure an unmerited advantage or abuse of power such as nepotism and cronyism as well as abuses linking public and private stakeholders such as extortion and influence peddling (Okoduwa, 2009).

**References**


Effectiveness of Extension Services in Disseminating Cassava Processing Technologies among Women Processors in Ogun and Oyo States, Nigeria

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Keywords: Effectiveness, Cassava processing, Extension agents, Technology, and Women

Introduction
Women farmers play vital role in cassava processing which enhances their ability to contribute to household food security. Significant breakthroughs have been achieved worldwide in the area of improved food processing technologies, yet Nigerian women processors rely on traditional methods of processing cassava (Nweke, 2004). The problem could be linked to lack of access to improved technology and less of extension services delivery among women in Nigeria (Ajayi, Farinde & Laogun, 2003). However, there is paucity of research that reveals the empirical
evidence of the level of extension services effectiveness amidst the prominent use of traditional methods among women processors in the study area. It is against this backdrop that this study was conducted.

**Purpose and Objectives**

This paper presents the results of the effectiveness of extension services in disseminating cassava processing technologies among women processors in Oyo and Ogun States, Nigeria. Specifically, it described the socio-economic characteristics; identified the preferred extension service delivery strategies; & examined the level of effectiveness of extension services.

**Methodology**

Study was conducted in Ogun and Oyo States of Nigeria. About 162 and 246 registered women cassava processors were randomly selected in Ogun and Oyo states respectively. Out of 408 questionnaires that were administered 400 were analyzable. A five-point Likert scale (Strongly disagree=1, disagree=2, indifferent =3, agree=4 and strongly agree=5) was used to elicit information on the effectiveness of extension services. Mean score of 1.0-2.9 = ineffective & 3.0-5.0 = effective.

**Results and Discussion**

**Socio-economic Characteristics:** Result of the study shows respondents had average age of 49 years, household size of 9 persons, experience was 17 years and frequency of extension contact was 16 times a year. Majority of women cassava processors were; married (83%), no formal education (82%), belong to cassava processing group (97%), family members as sources of labour (60%), sources of finance was through thrift/Ajo/Osusu (72%), and sources of information was through extension agents (62%). This confirms the findings of Banmeke & Olomu (2005).

**Extension Strategies Preferred by the Respondents:** Group methods such as result demonstration was ranked first (mean=2.7), group discussion (mean=2.5) was 2nd, and question and answer (mean=2.3) was 3rd. Group methods were the most preferred extension strategies by the respondents. Individual contact methods were moderately preferred by respondents while mass media methods were the least preferred. This result is consistent with the report of Buyinza et al., (2009).

**Effectiveness of Extension Services in Disseminating Improved Cassava Processing Technologies:** As shown in table 1, the mean values of all the statements on job competencies were greater than mean (3.0). Cassava women processors in the study area perceived extension agents’ job competencies to be effective. On job performance and transfer of information, only teaching methods used was considered effective. As regards adoption of improved technologies, full adoption of improved technologies was considered effective. All variables on processors’ productivity were perceived effective. This confirms the findings of Challa (2013) that improved technology reduce average cost of production, saves time and labour.
Table 1: Perceived Effectiveness of Extension Services on Improved Cassava Processing Technologies

<table>
<thead>
<tr>
<th>Effectiveness Indicators</th>
<th>Mean Score</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>A: Job Competencies</strong></td>
<td></td>
</tr>
<tr>
<td>Understand the technical know-how</td>
<td>3.1*</td>
</tr>
<tr>
<td>Operate cassava processing machines</td>
<td>3.0*</td>
</tr>
<tr>
<td>Designed to meet the need of processors</td>
<td>3.0*</td>
</tr>
<tr>
<td>Appropriateness</td>
<td>3.0*</td>
</tr>
<tr>
<td><strong>B: Job Performance</strong></td>
<td></td>
</tr>
<tr>
<td>Availability of processing machine</td>
<td>2.3</td>
</tr>
<tr>
<td>Awareness creation</td>
<td>2.5</td>
</tr>
<tr>
<td>Participate in operating cassava processing machines.</td>
<td>2.6</td>
</tr>
<tr>
<td>Help that proffer solutions to our problem</td>
<td>2.3</td>
</tr>
<tr>
<td><strong>C: Transfer of Information</strong></td>
<td></td>
</tr>
<tr>
<td>Friendliness</td>
<td>2.9</td>
</tr>
<tr>
<td>Teaching methods used</td>
<td>3.3*</td>
</tr>
<tr>
<td>Communication of information</td>
<td>2.7</td>
</tr>
<tr>
<td>Motivation to adopt new technologies</td>
<td>2.6</td>
</tr>
<tr>
<td><strong>D: Adoption of Improved Technologies</strong></td>
<td></td>
</tr>
<tr>
<td>Used both traditional and improved technologies</td>
<td>2.9</td>
</tr>
<tr>
<td>Fully adopted improved technologies</td>
<td>3.0*</td>
</tr>
<tr>
<td><strong>E: Output/changes in farmers Productivity</strong></td>
<td></td>
</tr>
<tr>
<td>Saves time</td>
<td>3.3*</td>
</tr>
<tr>
<td>Less drudgery</td>
<td>3.4*</td>
</tr>
<tr>
<td>Increase the quantity of processed cassava per day</td>
<td>3.4*</td>
</tr>
<tr>
<td>Maximize profit</td>
<td>3.5*</td>
</tr>
<tr>
<td>Improve welfare</td>
<td>3.4*</td>
</tr>
</tbody>
</table>

* = Effective

**Determinants of Effectiveness of Extension Services Rendered on Cassava Processing Technology:** All the six variables in table 2 were found to significantly influence the effectiveness of extension services at p< 0.05/0.01. This implies that variables with positive influence conferred benefits and opportunities which could motivate them to perceive extension services on improved cassava processing technology as effective and accept the technology. These results are in agreement with the reports of Odoemenem (2007). Also, increase in variables (age and experience) with inverse relationship implies decrease in the effectiveness of extension service on cassava processing technology. This result corroborates the findings of Tsoho (2004) that young farmers have higher tendencies to accept new technologies than conservative older farmers.
Table 2: Result of Ordinary Least Square Regression Analysis

<table>
<thead>
<tr>
<th>Variable</th>
<th>Standardized β</th>
<th>t-Value</th>
<th>p-Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>6.830</td>
<td>.000</td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td>-.321**</td>
<td>-2.611</td>
<td>.021</td>
</tr>
<tr>
<td>Marital status</td>
<td>.339***</td>
<td>-7.551</td>
<td>.000</td>
</tr>
<tr>
<td>Level of Education</td>
<td>.141**</td>
<td>2.110</td>
<td>.045</td>
</tr>
<tr>
<td>Household size</td>
<td>.167**</td>
<td>2.569</td>
<td>.034</td>
</tr>
<tr>
<td>Years of experience</td>
<td>-.265**</td>
<td>-2.161</td>
<td>.039</td>
</tr>
<tr>
<td>Membership of other group</td>
<td>.112**</td>
<td>2.500</td>
<td>.020</td>
</tr>
</tbody>
</table>

\[ R^2 = .347 \]
\[ R = .551 \]
\[ F\text{-Value} = 12.212 \]

*** 1%, **5%,

Conclusion and Recommendation

This study concluded that job competencies of extension services delivered and output/changes in farmer’s productivity on improved cassava technology were most effective. This study recommended that extension agents should use more of group methods in disseminating information on improved cassava processing technology to women cassava processors in the study area.

References


Enhanced Cross-Cultural Skills Through Purposeful Curriculum and Global Agricultural Experiences

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Introduction

Global education experiences are shown to have positive impacts on students in agricultural disciplines (Zhai & Scheer, 2002; Black, Moore, Wingenbach & Rutherford, 2013). These experiences allow students to gain global awareness (Kauffman, Martin, Weaver, & Weaver, 1992). Participants gain multiple viewpoints of cultures, and understand international issues at a higher level (Kauffman et al., 1992), which can lead to enhanced perspective of one’s own culture (Opper et al., 1990). Global education participants are more open to others’ differing values, and in turn appreciate these differences (Kauffman et al., 1992).

Culture’s role in international agricultural development was identified by Bruening and Shao (2005) as one of the top five most important topics in an international agricultural undergraduate course, along with agricultural extension and education systems in different countries and the importance of world-views (Bruening & Shao, 2005).

Career competencies are also crucial in international vocational education and higher education (Akkermans, Schaufeli, Brenninkmeijer, & Blonk, 2013). The Association of Public and Land-grant Universities (APLU) and the University Industry Consortium (UIC) explicitly identify and categorize modern career competencies into seven soft skill clusters (Crawford, Lang, Fink, Dalton & Fieltz, 2011).

If global agricultural experiences, culture, and career competencies are important to preparing the world’s agricultural practitioners, what outcomes might be derived from a purposeful curriculum delivered in an international agricultural education context that examines culture and career competencies?
Purpose

The purpose of this study was to describe enhanced cross-cultural skills and global perspectives as a result of participation in an international experience with purposeful curriculum combining international agriculture, culture, and career competencies.

Methods

In this qualitative phenomenology, participants were co-instructed (faculty from two southern Land Grant Institutions) as part of a four-week international agricultural experience in the United States and sub-saharan southern Africa. Researchers used structured, written reflections delivered near the end of the experience to capture students’ perspectives. Researchers open-coded the responses after identifying tacit units (N=100) using the constant comparative method (Lincoln & Guba, 1985). Researchers maintained credibility and trustworthiness by using frequent peer debrief, maintaining field notes, and compiling an audit trail in analysis (Lincoln & Guba, 1985).

Results

Ten themes emerged: enhancing global perspective (n=17), recognizing similarities and differences (n=13), breaking preconceived notions (n=12), valuing cultural heritage (n=10), enhancing academic and cognitive processes, communicating across cultures (n=8), changing behavior (n=8), storytelling (n=7), and overcoming discomfort (n=5).

Enhancing global perspective

Participants’ global views of culture changed. One participant wrote, “Namibian culture is only ONE culture in Africa. African culture can’t be generalized.” Other reflections echoed the recognition of co-existence of cultures and the importance of awareness of cultural norms in global citizenry.

Recognizing similarities and difference

Participants articulated a juxtaposition between highlighting similarities and noting differences among cultures. Both views elicited ‘shock’ as evidenced by two participants: “I was shocked at how different our cultures are,” and “I was shocked at how much it reminded me of home.” While participants reflected on differences, others pertained to similarities, as participants described “vast similarities I share with so many people on the other side of the world.”

Breaking preconceived notions

Participants reflected on the importance of open-mindedness, and described processes including breaking stereotypes and ability to “remove my goggles of what I expected to see and experience.”

Valuing cultural heritage

Reflections described how participants admired their international counterparts for their deep appreciation of cultural heritage, and indicated a desire to emulate that appreciation in their own lives. Inspired by people who “WANT to preserve their culture,” and who “come together under a common identity,” participants expressed deep appreciation of cultural pride. One participant wrote, “I have gotten so much closer to the idea of ‘loving where I came from.’”

Enhancing academic and cognitive processes

After the month-long experience, students described changes in experiences they seek and the way they think about, prepare for, and process those experiences. One participant described a desire to find experiences that further stimulated learning, and to avoid tourism-
focused occurrences. Others described valuing both research and reflection in their future experiences.

**Communicating across cultures**

Participants felt equipped and inspired to “ask more questions,” both with peers and in cross-cultural experiences. Participants felt better able to communicate with people of different backgrounds and cultures, further seeking opportunities to communicate across cultures, with an emphasis on forming deeper relationships.

**Changing behavior**

This theme highlighted participants’ desire to affect changes in their behavior and communities. Some participants articulated a need to find opportunities to “get outside my comfort zone back home as well,” while others described seeking opportunities for service and outreach to use newfound knowledge, skills, and abilities.

**Storytelling**

Participants described developing practices and products that share their experience with others, including online portfolios, photos, and personal stories that highlight the people and elements of the experience. “Sharing” and “story” were prominent characterizations in this theme.

**Overcoming discomfort**

Some participants described their discomfort in cross-cultural situations, one stating that they felt “invasive.” Other reflections noted that discomfort led to “overcoming adversity.”

**Recommendations**

Global experiences have profound impacts on students (Zhai & Scheer, 2002; Black, Moore, Wingenbach, & Rutherford, 2013; Redwine, Rutherford, & Wingenbach, 2015). Purposeful instruction and curriculum including field experiences in international agriculture, culture, and career competencies may enhance global learning. In this population, unique findings including community behavior change and wide acceptance of cross-cultural importance and skills indicates that the identified topics of instruction are complementary and fit into the body of knowledge in global agricultural education.

Further, participants in an international agricultural education experience with purposeful and supporting curriculum are better equipped to meet the needs of a global agricultural workforce. As such, international agricultural education practitioners should incorporate career competency and cultural instruction into existing programs and field experiences, both in formalized university-sponsored experiences, and in extension and informal education settings.

Future research on possible connections between career competencies and culture should explore other settings and populations, as well as identify quantitative measures to capture connections between curriculum and outcomes.

**References**


Bruening, T., & Shao, X., (2005). What should be included in an international agriculture undergraduate course. *Journal of International Agricultural and Extension Education.*


Entrepreneur Fellows’ Perceptions after Participating in a Fellowship Program to Empower Their Economic Success: Voices from Kenya, South Africa, and Uganda

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Keywords: entrepreneurship; international fellowships; livelihood improvement

Introduction/Review of Literature/Theoretical Framework
Federoff (2009) suggested “[t]he science, the engineering, and technology and the educational systems of developed countries [can introduce] new ways to create a world in which all people have the educational and economic opportunities now available almost exclusively in the developed world” (p. 9). Further, “[t]here is a need for a profound shift in our involvement
with people in developing countries from distant aid recipients to partners in building a global future” (Fedroff, 2009, p. 9). In 2013, the U.S. Department of State (USDoS) funded an Oklahoma State University (OSU) proposal to facilitate collaboration and learning among emerging agricultural and allied business entrepreneurs from Sub-Saharan Africa (SSA) with U.S. agribusiness, extension, and education leaders through an international fellowship program (OSU Grant Proposal, 2013).

The 23 participants – Entrepreneur Fellows (EFs) – included agricultural entrepreneurs, educators, farmers, non-profit organization leaders, textile and food purveyors. The fellowship program involved training on U.S. business practices, international trade, new media use, and entrepreneurship; job-shadowing/internship experiences personalized to address the learning goal(s) of each EF; and U.S. cultural activities.

The program’s goals were undergirded by the theory of planned behavior (TPB) (Ajzen, 1991), which guided program assessment. According to the TPB, modifications to entrepreneurial behaviors associated with the fellowship experiences were reliant on intentions the EFs had prior to their U.S. program involvement and experiences occurring during the program. Intentions would affect attitudes and perceptions of related benefits held by each EF (Ajzen, 1991). In addition, the researchers anticipated the EFs’ attitudes would be informed by the skills and knowledge they perceived learning during the fellowship, i.e., their future perceived behavior control (Ajzen, 1991) as well as inspirations likely to impact future success (Kuckertz & Wagner, 2009).

**Purpose/Objectives**

The study’s purpose was to describe the views of individuals from Kenya, South Africa, and Uganda regarding their entrepreneurial experiences after participation in a professional development program intended to enhance their capacity as entrepreneurs in their home countries. The study also sought to describe the EFs’ perceptions of the program’s impact, especially its mentoring component, on their entrepreneurial endeavors after returning to their communities. In addition, the unique entrepreneurial training and support needs of women and other marginalized groups comprising a portion of the Fellows’ cohort, e.g., organizers of youth development programs, were explored.

**Methods/Data Sources**

Purposeful steps were taken to ensure the quality of this qualitative multicase study based on protocols identified by Stake (2006), Tracy (2010), and Saldaña (2013). Face-to-face interviews with 15 South African and Ugandan EFs were completed in May of 2015. Thereafter, six Kenyan EFs and one South African were interviewed using Skype or Google Hangout during the summer of 2015. The 22 interviews was transcribed verbatim and provided to the EFs through electronic mail for member checking to ensure credibility and accuracy of the transcriptions (Creswell, 2007).

The transcriptions were initially subjected to word-for-word content analysis using conventional methods resulting in coding categories derived from the textual data (Hsieh & Shannon, 2005). NVivo’s counting and comparison analysis software was used to confirm keywords, content, and context (Hsieh & Shannon, 2005) culminating in distillation of the study’s predominant themes (Creswell, 2007).
**Results/Conclusions**

Analysis of more than 235 pages of interview data identified 16 categories aggregated to create five themes: *entrepreneurial skills and concepts; mentoring relationships; new media usage integral to entrepreneurial endeavors; financial needs; and commitment to youth development.* Statements supporting the themes were mostly positive in regard to the EFs’ perceptions of their personal growth and future entrepreneurial aspirations.

Intensive training on entrepreneurship, new media use, teambuilding, U.S. culture, and international trade were identified most frequently as the U.S. business skills gained from the fellowship program. After the fellowship, relationships with U.S. business mentors were described by eight EFs as impactful on their entrepreneurial activities while 12 indicated two OSU project team members as primary influentials in regard to ongoing mentoring. Time management and related timeliness practices reinforced during the fellowship were reported to influence the EFs’ work activities and expectations when they returned home.

Facebook was mentioned as being used regularly in the entrepreneurial activities of all 22 EFs. WhatsApp and Skype were indicated by more than one-half of the EFs as integral to communication activities associated with their ventures. Though not considered new media, electronic mail and mobile telephone were also identified as important to the EFs’ businesses, especially as related to invoicing, scheduling meetings, and complying with governmental regulations.

Obtaining financial support for startup and/or expansion of their ventures was viewed as one of the greatest business needs or barriers to success by 18 of the 22 EFs. More than one-half of the EFs indicated involvement with youth programs in at least one of their entrepreneurial goals either as motivation for participating in the fellowship or enhancing their activities as a result of exposure to U.S. youth development programs in and for the agriculture sector.

Participants’ interview responses revealed their intentions to attain U.S. entrepreneurial skills before participating in the fellowship program. In addition, many of the skills they perceived acquiring during the fellowship were adopted as entrepreneurial behaviors in their ventures. Business relationships with U.S. entrepreneurs and other mentors were maintained primarily through the use of new media after the EFs returned to their home countries.

**Recommendations/Implications/Educational Importance**

The USDoS should continue to fund fellowships similar to the kind described here. Recognizing the importance of youth development to the agricultural and allied sectors of the countries involved and most other developing nations, future fellowships should include even more intentional programming stressing such with special emphasis on youth entrepreneurship, job creation, and livelihood improvement. Moreover, additional planning is warranted regarding the use of communication tools – new media and traditional – to facilitate ongoing relationships with mentors and other U.S. colleagues after fellowships end. In the future, more fellowship programming should be devoted to strategies for acquiring capital to fund the participating entrepreneurs’ startups and continuing enterprises.

**References**


Entrepreneurial Education in Middle Level Tertiary Institutions: Rift Valley, Kenya

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Keywords: Post-secondary education, entrepreneurship, curriculum improvement

Introduction
Entrepreneurial education has enhanced growth in small and medium business enterprises, particularly in developing countries (American Council on Education, 2015). This growth is partly associated with entrepreneurship education growth in middle level tertiary institutions (Omidyar Network, 2014) which have been reported to be breeding grounds for enhancement of entrepreneurial innovations (World Bank, 2010). This has been coupled with growth in private-public partnership programs (American Council on Education, 2015). Partnership programs such Kenya Youth Business Trust, Women’s fund, and Youth Enterprise Development Fund (Gichana, 2011) have played crucial roles in encouraging young people to acquire entrepreneurial skills by taking advantage of government financial support and entrepreneurship training (GoK, 2011; Omidyar Network, 2014). Much of the entrepreneurial education taking place in middle level tertiary institutions in developing countries is focus on agriculture and agriculturally related enterprises.

Theoretical framework
Entrepreneurial culture is seen as key to motivating young people to take up business related programs in middle level colleges (Herrington, Kew, & Kew, 2010) and are primarily training vocational hands on skills (Simpeh, 2011). There is a need to have clearer understanding about entrepreneurship education in middle level tertiary institutions in developing countries. Cultural entrepreneurship theory argues that propensity for an individual to start a business venture is largely influenced by the prevailing culture (Simpeh, 2011; Gichana, 2011).

Literature Review
Entrepreneurship education is becoming more prevalent in middle level tertiary institutions in developing countries. According to Baker (2015), a variety of institutions educate
entrepreneurs. There are challenges such as a shortage of trained personnel to teach entrepreneurship education, inadequate instructional resources (HRDC, 2014), sparsity of curriculum in entrepreneurial education (Simpeh, 2011), concern by students related to hands-on related courses (Indaba, 2014), limited participation in practical learning (HRDC, 2014), inadequate support from already established business (HRDC, 2013), inadequate systems of tracking students’ progress (Gichana, 2011), and low flexibility due to tightly set curriculum (Katz, 2007). In addition, internship programs, government supported incubators, and private entrepreneur support incubators are almost non-existent in developing countries (Omidyar Network, 2014).

In order to tackle these challenges, Arogundade (2011) suggested improvement of basic education from which entrepreneurial education stems, development of public awareness about the need for vocational entrepreneurship education, improved training of personnel, and private-public sectors partnership. In addition, Baker (2015) suggested immersion of short-term experiences and distance learning technologies for training and retraining college faculty.

**Purpose**

The purpose of the study was to gather information on the current status of entrepreneurship education in selected technical training institutes in Kenya. The study objectives were to; 1) determine existing preparation of students for entrepreneurship, 2) determine constraints facing implementation of entrepreneurship programs, 3) identify promising enterprises for graduates, and 4) identify strategies for improvement.

**Methodology**

The study focused on technical training institutes located in the Rift Valley region in Kenya, namely Baraka, Eldoret, Sangalo, and Rift Valley training institutes. Data were collected from students, instructors and administrators. The selection of the institutes and participants for this study was through purposive sampling (Creswell, 1998; Gall, Gall, & Borg, 2007). Semi structured interviews were administered with a guide and follow-up questioning (Goodall, 2008). During interviews, discussions were recorded and notes taken. The recordings were transcribed and notes were compared with transcriptions. Open and axial coding were used to categorize the transcribed interview responses. Research rigor was achieved through credibility, transferability, dependability, and conformability (Creswell, 1998). Peer review was used to achieve credibility and confirmability while study context ensured transferability. Clear, logical, and complete documentation of the research established dependability.

**Results and Discussion**

The survey involved 20 participants (12 students, 4 administrators and 4 instructors) from four technical training institutes. Four key themes emerged and were coded as follows: students’ preparation for entrepreneurship (SPE), constraints facing entrepreneurship education (CEE), promising enterprises for graduates (PEG), and strategies for improvement (SI).

In regard to preparation of students for entrepreneurship, the majority of students mentioned that the institution provided coursework, supported students in forming business clubs, and compulsory field attachment for practical experience. Instructors and administrators noted that institutions had integrated entrepreneurship education in the curriculum, provided practical skills to students through field attachment and internal projects, exposing students to
agricultural and business fairs, and providing startup capital for cooperative shops. In addition, some institutions provided entrepreneurship education as a certificate course.

Despite the fact that entrepreneurship education is integrated in the curriculum, its implementation is faced by a number of constraints. Among those mentioned by students were start-up capital as a result of inaccessible credits, and lack of government support. Secondly, students mentioned inadequate access to land which ensued from land fragmentation. Also mentioned were inadequate access to markets due to poor infrastructure, competition, lack of marketing skills, and exam oriented curriculum. These constraints were reiterated by administrators and instructors. In an effort to curb some of these constraints, the institutions promoted promising enterprises by supporting students to form business clubs and operate small business enterprises such as grocery stores, shops, and in some institution they were allocated farming plots. Apart from the ones being undertaken, students also mentioned dairy, poultry, apiculture, and agroforestry as promising enterprises.

Based on the findings it is clear that entrepreneurship education is being taught in tertiary institutes either as a certificate course or integrated in the curriculum. However, some institutes have plans to offer entrepreneurship education as a diploma course. These programs can be improved by addressing the aforementioned constraints.

**Recommendations**

It is recommended that the institutes set up business incubators for providing start-up capital for selected students, enhanced follow ups of graduates, upgrading learning facilities such as library, incorporating ICT in the curriculum, and enhanced practical learning through internal projects, cooperative shops, and external internship.

**References**


Evaluation Competencies: Self-assessment by Extension Officers in Jamaica and Tobago

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Introduction and Review of Literature

Globally, competency and competency development programs have received attention and emphasis among public and private institutions (Ghimire, 2010). The field of Agricultural Extension is no exception. Such programs aim to upgrade the skills and knowledge of the employees and assist them to stay current with the changing world. This study aimed to explore the knowledge and skills of Agricultural Extension Officers (AEOs) in two Caribbean islands (Jamaica and Tobago) to determine their further training needs in program evaluation. These AEOs are the front line workers who are directly involved in providing agricultural extension advisory services to clients, mainly farmers.

In Jamaica and Tobago, when it comes to state agricultural extension advisory services, there are several enabling factors as well there are challenges that must be addressed. One of the important challenges is that evaluation does not occur routinely in traditional extension programs. Occasionally a grant funded project may have an evaluation component which serves the purpose of assessing the impact and successes of the project’s intentions. However, these types of evaluations do not provide an understanding of impact at the frontline of extension advisory services.

Most agricultural extension programs worldwide receive little or no evaluation (Barker & Killian, 2011; Ghimire, Koundinya, & Holz-Clause, 2014). Rennekamp and Engle (2008) attributed the reasons for this as being a lack of knowledge and skills and inadequate
commitment of the extension organizations for building evaluation capacity of their employees. According to Harder, Place, and Scheer (2010), an organization that identifies the level of knowledge, skills, and abilities of its employees and works to enhance their capacities through training and education will achieve professional success.

**Purpose**

The purpose of this study was to determine the knowledge and skills of Agricultural Extension Officers in Jamaica and Tobago to determine their further training needs in program evaluation.

**Methods**

The data collection instrument for the study was a closed-form questionnaire. The instrument included 11 competencies related to program evaluation. These competencies were measured using a five-point Likert-type scale to identify respondents' level of knowledge and skills and to determine their needs for further training (1 - being very low and 5 - being very high).

The AEOs were purposively selected to serve as the sample for this study. In both islands, a research team approached the participants in-person to administer the survey. Twenty three AEOs in Jamaica and 19 AEOs in Tobago completed and returned the survey with a total response of 42. In Jamaica, the survey was conducted during a week-long training session on Farmer Field Schools where AEOs from various extension districts were assembled. The survey in Tobago was conducted at a regular monthly meeting of frontline extension officers representing all extension districts. Means and standard deviations were computed to identify respondents' competency knowledge and skill and their needs for further training.

**Results**

Table 1 shows that across the listed evaluation competencies, participants reported ‘moderate’ to ‘high’ knowledge and skills and similar ratings for their further training needs.
Table 1

Mean Ratings by AEOs for Their Knowledge and Skills and Further Trainings Needs in Program Evaluation Competencies (n = 42)

<table>
<thead>
<tr>
<th>Evaluation Competencies</th>
<th>Knowledge and Skills</th>
<th>Training Needs</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M</td>
<td>SD</td>
</tr>
<tr>
<td>Using techniques to assess learner's reaction to learning experiences</td>
<td>3.29</td>
<td>1.13</td>
</tr>
<tr>
<td>Assessing learning outcomes</td>
<td>3.31</td>
<td>1.11</td>
</tr>
<tr>
<td>Developing survey instruments</td>
<td>3.05</td>
<td>1.14</td>
</tr>
<tr>
<td>Implementing survey research</td>
<td>3.14</td>
<td>1.28</td>
</tr>
<tr>
<td>Analyzing survey results</td>
<td>3.19</td>
<td>1.31</td>
</tr>
<tr>
<td>Evaluating results of extension activities</td>
<td>3.52</td>
<td>1.19</td>
</tr>
<tr>
<td>Interpreting survey results</td>
<td>3.24</td>
<td>1.28</td>
</tr>
<tr>
<td>Assessing impact of a program</td>
<td>3.19</td>
<td>1.11</td>
</tr>
<tr>
<td>Identifying problems requiring additional research</td>
<td>3.29</td>
<td>1.13</td>
</tr>
<tr>
<td>Assessing client expectations</td>
<td>3.21</td>
<td>1.24</td>
</tr>
<tr>
<td>Using impact data for further planning</td>
<td>3.14</td>
<td>1.16</td>
</tr>
<tr>
<td>Summated Mean Score</td>
<td>3.23</td>
<td>1.18</td>
</tr>
</tbody>
</table>

Note: Very low = 1, Low = 2, Moderate = 3, High = 4, Very High = 5.

Educational Importance and Implications

Findings of this study have important implications for Agricultural Extension in Jamaica and Tobago. First, self-assessed needs for further training indicates that AEOs would respond positively to professional development programs offered on program evaluation. This idea has related implications for developing policies and guidelines in designing trainings as well as for selecting, hiring, and promoting extension staff.

International implications

According to a World Bank report (Rajalahti, Woelck, & Pehu, 2005), evaluating the impact of agricultural extension projects and their performance has been a significant challenge in developing world. Moreover, the increased focus of donors on program impacts has resulted in a high demand for expertise in program evaluation among the extension professionals.

Results of the current study indicated a gap in AEOs knowledge and skills in program evaluation. In this context, findings may provide some insight on how the agricultural extension systems in the developing world could provide greater human resource development by enhancing the evaluation competencies of their extension staff. At the very least, this study may entice a change in Commonwealth Caribbean Civil Services as the current training policy do not have mechanisms for training units to be accountable for spending on and assessing the outcomes of, training activities (Sutton, 2008).
**Recommendations**

This study recommends that the Extension leaders in Jamaica and Tobago design and implement professional development trainings for AEOs in program evaluation. Focus of these trainings should be for the competencies with highest mean ratings for training needs (Table 1). The Extension leaders should critically assess their current professional development activities and revise the existing training curricula.

The Extension leaders should design flexible staff development programs through graduate programs, in-service training, and on-the-job training. Similarly, the experiential learning workshops held in the workplace would enhance employees’ evaluation capacity through in-situ practice and experience. This study also suggests that the universities and colleges with academic extension education programs review their curricula to make sure that future extension staff are trained well to assess program outcomes using scholarly evaluation methods. Offering courses on program evaluation is recommended especially for colleges of agriculture.

**References**


Ghimire, N. R. (2010). *The relative importance of selected educational process professional competencies to extension educators in the North Central Region of USA* (Unpublished dissertation), Iowa State University, Ames, IA.


Exploring Factors Related to the Diffusion of Facebook Among Smallholder Farmers in Central Taiwan

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Introduction

The agricultural operation mode in Taiwan is represented mainly by smallholder farms. The average farm size is only about 1.73 acres per family (Taiwan Council of Agriculture, 2012). Family income is 20% less for farm households than for all households. Chang and Tsai (2015) found that Taiwanese farmers generally learn about agricultural technology and acquire farming knowledge from other farmers by sharing information and following the practical examples of other farmers. Another way for Taiwanese farmers to learn is from government extension programs. To improve communication and knowledge exchange among farmer communities and between farmers and their customers, the Taiwan Council of Agriculture encourages farmers to adopt social media to gather agricultural information and to interact with potential consumers. Facebook is a successful social network site for information gathering and sharing. Facebook can also be used as a communication and marketing platform for small business (Yates & Vallas, 2012). This is a good way to start conversations with customers. Farmers can use Facebook to deliver stories and news about their farms directly to their potential customers to increase sales of crops or agricultural products.

The theoretical framework used in this study is adapted from Rogers’ (2003) diffusion of innovations theory. Telg and Barnes (2012) found that members of Florida Young Farmers & Ranchers thought that the Florida Farm Bureau Federation should adopt social media for internal and external communications.

Purpose

The purpose of this study was to determine the influences of selected factors on the adoption of Facebook by Taiwanese smallholder farmers. Specific objectives of this study were to (a) describe selected personal characteristics of the respondents,(b) explore selected smallholder farmers’ stage in the innovation-decision process, based on Li’s (2004) and Harder’s (2007) adaption of Rogers’ (2003) stages in the innovation-decision process, and (c) describe the extent of responding farmers’ use of Facebook.

Methods

A descriptive research design was used for this study. The target population was farm families of Dahu Farmers’ Association in Miaoli County in 2015. Three hundred and fifty one
smallholder farmers participated in the survey. A paper-based questionnaire was used to collect data.

Results

Most respondents had farming experience of between 11-15 years and 6-10 years. Most of the respondents were 51-60 years old (29.3%), 41-50 years old (23.4%), and 61-70 years old (21.1%). This is similar to the results of the annual agriculture census conducted by the Taiwan Council of Agriculture (2013b). However, the median farming experience was 14 years. This suggests that these farmers might have had jobs in other industries before moving into agriculture. It implies that respondents have the ability of social mobility.

Most respondents had a senior high school degree (40.7%) or junior high school degree (25.4%). A total of 61 respondents had elementary school degrees. The fewest respondents had a Bachelor’s or higher degree (16.3%). This shows that the responding farmers had a lower education level than the average for farmers in Taiwan.

Most of respondents only had income from farming (54.2%). Fewer respondents had their main income from farming and extra income from non-farming (33.0%). Farmers in the Dahu area are less likely to have non-farming primary jobs or part-time jobs. The reason may be that the Dahu area is a remote rural area. The local industry is mainly agriculture. Compared to other areas of Taiwan, there are fewer non-farming jobs.

Nearly half of the responding farmers were at the stage of “implementation.” Sixteen respondents were at stage of “confirmation.” Ninety-seven respondents were at the stage of “knowledge.” Thirty respondents were at the stage of “no knowledge.” Time is involved in the innovation-diffusion process (Rogers, 2003). At the time of this study in 2015, Facebook has been popularized in Taiwan for more than six years. This could explain why most of the respondents at least had knowledge of Facebook. As Facebook provides the functions of receiving daily information and connecting with family and friends, it is not surprising that more than half of the responding farmers were in the stage of implementation and the stage of confirmation of the innovation-decision process.

Most respondents had Facebook accounts. The most common usages of Facebook were to connect with friends, receive agricultural information, read daily news and information, share daily life stories with others, and share professional knowledge with others. This indicates that farmers’ usage of Facebook is more than for social purposes. Nearly half of respondents with Facebook accounts used Facebook for farm marketing purposes. Farmers in the Dahu area had a higher number of Facebook friends. A possible explanation is farmers used personal Facebook account to manage and operate their farm business. In addition to real friends in the offline world, they may add customers and extension agents as Facebook friends.

Recommendations

For further research, the recommendations are to: (a) explore more varying characteristics of adopters to see if these characteristics also influence speed of adoption, (b) investigate the innovation-decision process and the extent of farmers’ use of Facebook in other rural and urban areas of Taiwan to see if the distribution of process is different from this study, (c) explore factors related to varying characteristics of opinion leaders, and (d) explore the factors influencing potential adopters who had tried to use Facebook but ended up stopping their use.

Recommendations for practice based on Rogers’ (2003) theory are to: (a) provide more information to farmers who are at the stage of knowledge about how to use Facebook and the
benefit of using Facebook for communication and information, (b) provide positive reinforcement to farmers who are in the stage of implementation to so they can move to the stage of confirmation, (c) extension and government organizations can use Facebook to communicate with farmers for delivering information and promoting new policies, and (d) to encourage farmers to use Facebook to change the perception of agriculture among the public.

References
Exploring Factors that Influence Caribbean Students’ Intent to Enroll in Post-Secondary Agricultural Degree Programs

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Introduction/Theoretical Framework/Review of the Literature
The United Nations Food and Agriculture Organization (FAO, 2014) highlighted the importance of engaging youth (ages 15-24) in agriculture, both as a means to increase food security, and to enhance rural livelihoods. As a key priority in the National Food Production Plan for 2012-2015, the government of Trinidad and Tobago similarly recognized the need to attract more youth into the agriculture sector, especially graduates with tertiary level education (MFPLMA, 2012). However, it is not known why youth choose to study agriculture at the tertiary level. The Theory of Planned Behavior (TPB) (Ajzen, 1991) provided the lens to explore this phenomenon. In the TPD, Ajzen proposed a person’s beliefs influence their intentions, which in turn influence their actual behaviors.

Purpose and Objectives
The purpose of this study was to retrospectively explore factors influencing students’ intent to enroll in an undergraduate or postgraduate program in agriculture at the University of the West Indies. Specifically, the study focused on intent to enroll in collegiate agricultural programs as a function of attitude, subjective norms, and perceived behavioral control.

Methods and Data Sources
A basic qualitative design (Merriam & Tisdell, 2016) was used for the research. The target population for the study consisted of students enrolled in an undergraduate or postgraduate program in agriculture at a Caribbean university. The majority of students at the University of the West Indies are enrolled in non-agricultural programs. Purposive sampling focused on unique cases was used to identify potential participants, who then recommended other potential participants. The research team has a high degree of familiarity with students within agriculture at the University of the West Indies, and initially identified four students for inclusion in the study, based on personal knowledge of these students’ academic and professional accomplishments. An additional six students were identified through network sampling.
A semi-structured interview guide was used to conduct ten face-to-face interviews in May 2016 at the University of the West Indies campus, which were recorded and later transcribed verbatim. Questions included in the guide were influenced by Ajzen’s (1991) Theory of Planned Behavior (TPB). For example, participants were asked: “During the time period that you were deciding what to study at a tertiary level, what did people who are important to you think about the possibility of you enrolling in your program?” This question aligns with the concept of subjective norms outlined by Ajzen. Interviews took approximately 10 to 25 minutes each, with the average interview lasting about 15 minutes. Guided by the TPB, primary themes were grouped together using the constant comparative method (Merriam & Tisdell, 2016), which led to emergent themes that described individuals’ attitudes, norms, and control beliefs. A member check was conducted to allow participants to review their interview transcripts for accuracy (Lincoln & Guba, 1985); no corrections were made as a result.

**Results and Conclusions**

Interviewed students’ attitudes toward their engagement in agriculture were heavily influenced by their *family’s agricultural involvement*. Either their parents were farmers, or the respondents had extended family involved in agriculture. Hence, students had a good idea of employment opportunities in agriculture, and the nature of agricultural work. Some individuals noted they wanted to start their own farms as an entrepreneur. For example, John said “I always plan to start my own dairy herd” and, “I grew up around sheep being reared at my grandfather’s place.” Others enjoyed the opportunity to work outdoors. Mary shared her interest in “seeing hydroponic systems, getting hands on practice, visiting farms”, and stating “extension is a way I could work with farmers.” In general, engagement in agriculture was viewed positively by the students.

Another emergent theme was based on subjective norms. Most students noted *agriculture was an uncommon choice of study* for tertiary education. In one case, Jenny stated she “didn’t know agriculture was a subject” at a university level. Popular areas of study were engineering, law, and medicine, and as a result, Tracy’s friends were “questioning her choice to pursue an agricultural related degree.” However, an older student recalled that “Agriculture was highly competitive” when he graduated from high school. He stated at a tertiary level “there was no places in agriculture, the class was filled.” In most cases, the interviewed students pursued academic programs in agriculture despite social norms favoring other areas of study.

With regard to perceived behavioral control, interviewed students perceived no major barriers existed to their engagement in agriculture. Most students had *freedom to choose* their preferred area of study, and were not forced into any particular field. In most cases, students’ parents exerted very little control, and allowed their children to decide on their own area of study. Jenny stated her mother “had an agricultural background, and had no issues with me doing agriculture.” In most instances, when students made the decision to pursue a degree in agriculture, they had *high confidence in their ability* to be successful. Brian noted “I had no second choices, no second guessing, this is what I wanted to do,” while Jenny said “I was very confident, to me it was like no other choice.” Familial support and self-confidence lead students to believe they were free to choose whichever program of study they liked.

**Implications and Recommendations**

Azjen (1991) theorized behavioral intent is a function of attitude, subjective norm, and perceived behavioral control. We found attitude and perceived behavioral control to be more
important factors leading to behavioral intent than subjective norm for the students in our study, suggesting peer influence is not a significant influence on selection of academic pathways at the tertiary level. However, our results also showed the interviewed students had a lifelong relationship with agriculture and supportive families. Practically, these conditions are hard to replicate. We are also hesitant to assume a family tradition of agriculture always leads to positive attitudes about studying agriculture at the tertiary level. However, the University of the West Indies may be well served by targeting students of households in agricultural communities. It is recommended the University of the West Indies increase its presence among secondary level students in agricultural villages to increase awareness of agricultural programs offered at the tertiary level.

References
Exploring the Efficacy of a Distance Professional Development Course to Enhance Extension Behavior Change Competencies

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Keywords: distance education, extension competencies, evaluation

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Introduction / Theoretical Framework

Social marketing is the use of traditional marketing tools and principles to bring about voluntary change that benefits an individual, their community, and/or the environment (McKenzie-Mohr, 2011; Warner & Murphrey, 2015). This approach is considered a promising way to influence community change (Rogers, 2003) but it is underutilized by extension professionals, who have indicated inadequate skill and knowledge as barriers to using this strategy (Warner & Murphrey, 2015). An online, self-paced certificate program was created to address this barrier and provide professional development for extension professionals on using social marketing.

Distance education is an important solution to some of the barriers to traditional educational methods and this format allows a maximum number of individuals around the world to participate regardless of geographical location (Bruce & Johnson, 2004; Harder & Lindner, 2008). The program includes eight modules, each with a short instructional video, application and discussion activities, and exit quizzes to ensure key principles are understood. Content includes topics such as the theoretical foundations of social marketing, using this approach to change behaviors, applying social marketing tools to extension campaigns, and evaluating behavior change programs. To earn the certificate, participants must earn a cumulative 75% out of the eight modules.

In its first year the program reached approximately 250 individuals from a national and international audience. While the majority of participants were extension professionals, non-profit organizations, universities, and governmental entities were also well-represented. Many participants are currently enrolled and 53 have earned the certificate to date.

The overall goal of the program is to provide participants with the knowledge and skills necessary to apply social marketing to their individual extension programs and local contexts. Therefore, the Concerns-Based Adoption Model (CBAM; Hall & Hord, 2006) was selected to capture changes in participants’ perceptions and implementation of social marketing. CBAM explains that educators advance through seven stages as they navigate potential adoption of new innovations or teaching methods (Hall, 1977). The stages and their characteristics are: unconcerned (not interested); informational (awareness and interest in learning more); personal
(concerned about how the innovation will impact one personally); management (individual focuses on how they can be most effective in using the innovation); consequence (focus shifts to concern about the innovation’s impact on students); collaboration (concerned about using the innovation in cooperation with others); and refocusing (individual is looking to maximize benefits from the innovation, possibly by changing or replacing it; George, Hall, & Stiegelbauer, 2006). Programmatic success was defined a priori as shifting the group’s collective incoming stage of concern to a more advanced stage upon certificate program completion.

Purpose and Objectives
The purpose of this study was to examine the effectiveness of the Cultivating Community Change online certificate program. The specific objectives were to:

1. describe the stages of concern among certificate program participants upon beginning the course; and to
2. describe the stages of concern among certificate program participants upon completion of the course.

Methods
The Stages of Concern Questionnaire (SoCQ; George et al., 2006; Hall, George, & Rutherford, 1977) was used to capture changes in concern about social marketing. The participants were asked to complete SoCQ at the beginning of the certificate and again at the completion of the certificate. Data were analyzed using Microsoft Excel (2013) and used to calculate raw and percentile group stages of concern scores.

Results
Analysis of social marketing SoCQ revealed that at the beginning of the certificate program (pretest), the highest stages of concern among participants was informational, which indicated that most participants wanted to know more about social marketing and how it could be applied to their work (Figure 1). The second highest stage of concern at the pretest was personal, which indicated that participants were also concerned about how using social marketing would affect them in terms of status, rewards received, and their work. Upon completion of the certificate program, participants had similar highest stages of concern to the pretest, yet these stages were reduced. Both collaboration and refocusing stages substantially increased, meaning that certificate program participants were interested in working with others and even improving and adapting the use of social marketing in their educational programs.
Implications and Recommendations

Certificate program participants demonstrated advanced stages of concern as a result of the program. However, they would still like to know more about social marketing and how it affects them personally, which implies that while the program was successful among early participants, additional resources and training are needed to provide support to more fully reduce informational and personal stages. Upon completion of program, participants’ concerns had broadened, indicating increased readiness to use social marketing. Specifically, they have increased their concerns about collaboration and using social marketing in their work more widely. Overall, the certificate program helped participants to move to more advanced stages of concern about applying social marketing to their educational programs, indicating they were actively applying or considering applying social marketing to their work. These findings reveal this is a promising approach for professional development that transcends geographic boundaries.

It is not known why the percentile of those uninterested in social marketing (unconcerned stage) would be relatively high at the pretest given that this is a non-mandatory professional development offering. Future research should examine the motivations to enroll more closely. Additionally, we recommend research to examine possible differences in effectiveness based on an individual’s length of experience in extension work, their education level, and previous experience with social marketing. It is possible that this program is best serving a specific subset of participants, and findings may reveal ways to better help enrollees to gain the skills needed to use this behavior change strategy. A qualitative analysis may also be useful in better understanding the influence of the program. We recommend a long-term follow-up evaluation be conducted to confirm the actual use of social marketing among program participants.

Figure 1. Participants’ stages of concern group profile pre- and post- social marketing certificate program
References


Exploring the Sources People Trust and How They Think Critically About Food Safety Information

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Keywords: food safety, critical thinking, information source, public opinion, extension education

Introduction
Food contaminated by microbes or chemicals puts humans at risk around the world (World Health Organization [WHO], 2015) garnering public attention as a result of increased concerns about the food system (Losasso et al., 2012; WHO, 2015). While extension professionals have made efforts to educate about food safety and the proper handling of food to minimize foodborne illness (Koundinya & Martin, 2009; United States Department of Agriculture, 2016), only a limited audience has been reached.

Consumers’ use of information sources and their perceptions of those information sources may influence their use of the information, knowledge gain, and behavior change associated with food safety (Burke, Young, & Papadopoulos, 2016; Jacob, Mathiasen, & Powell, 2010). As food safety information is available in a variety of information sources, the majority of individuals lack the ability to identify credible and trustworthy information sources (Burke et al., 2016; Medeiros & Buffer, 2012; Ward, Henderson, Coveney, & Meyer, 2011). Research has shown individuals use information differently depending on their critical thinking styles. Critical thinking styles explain “how an individual prefers one particular method to another when processing information, or critically thinking about a particular topic” (Gorham, Lamm, & Rumble, 2014, p. 44). Given this, it is expected that individuals process and utilize information differently when solving problems, such as how to ensure their food is safe (Lamm, Harder, Irani, Roberts, & Snyder, 2011). To ensure extension programs are reaching vast audiences, extension professionals should provide educational programs that can easily be used by audiences with different critical thinking styles through information sources they rely on in order to make a greater impact on reducing food safety issues.

Purpose and Objectives
The purpose of this study was to explore how critical thinking style relates to how the public accesses food safety information and the perceived trustworthiness of various information sources in order to guide extension professionals’ efforts. The objectives were to identify respondents’ (a) critical thinking styles, (b) use of information sources, and (c) perceived trustworthiness of information sources, and to determine if relationships exist between respondents’ critical thinking styles and perceived trustworthiness of information sources.
Methods and Data Sources

This study, utilizing an online survey, was descriptive and correlational. A survey was distributed to U.S. residents aged 18 or older using a non-probability opt-in sampling method. A total of 2,790 individuals entered the survey, and 1,024 complete responses were received, resulting in a 37% participation rate. Post-stratification weighting methods were used to ensure respondents were representative of the population of interest (Baker et al., 2013; Kalton & Flores-Cervantes, 2003). Data were analyzed using SPSS® 24.0.

The survey instrument was researcher-developed, reviewed by an expert panel, and pilot-tested to ensure the instrument was valid and reliable. Respondents’ critical thinking styles were measured using the University of Florida Critical Thinking Inventory (UFCTI, Lamm & Irani, 2011). The UFCTI scale is comprised of 20 statements associated with individuals’ styles of using information and critical thinking that individuals are assigned as either information seekers or engagers based on the scores (Lamm & Irani, 2011). Respondents were then asked to indicate the information sources they used to receive food safety information by selecting all that apply to seven information sources. Respondents were also asked to indicate their perceived trustworthiness of the seven information sources about food safety information on a five-point Likert-type scale. The measurement of perceived trustworthiness was found reliable with Cronbach’s α of .86.

Results

Within the respondents, 53% had a UFCTI score of 79 and higher and were identified as seekers (n = 547); 47% had a UFCTI score of 78 and lower and were identified as engagers (n = 477). The information source that most respondents used to obtain food safety information was from family and friends (n = 660, 64%). However, the information source that most respondents perceived to be the most trustworthy was health professionals (n = 459, 45%). The overall UFCTI score was positively correlated with the perceived trustworthiness of all the listed information sources, which indicated seekers tend to see all the information sources as trustworthy. For information sources of health professionals, the government, and food manufacturers, the magnitude of correlation between UFCTI score and perceived trustworthiness was greater in engagers than seekers; however, the trends were opposite for information sources of family and friends, news media, cooking shows, and social media where the correlation magnitude was greater in seekers than engagers.

Conclusions, Implications, and Recommendations

The findings indicated more respondents tended to actively search for information from a variety of sources when dealing with food safety issues than to gain information from the environment. This finding implies that when it comes to food safety, more individuals would like to reach out for information when making decisions. The finding also revealed respondents tended to receive food safety information from sources that are easier to access, such as family and friends, whereas information sources such as professionals, that are more difficult to access, were perceived as more trustworthy. This finding implies that although food safety information is available in respondents’ easy to reach environment, they are aware of the differences in the quality of the information received from different sources and show trust in professionals when it comes to health-related issues.

Seekers and engagers exhibited different perceived levels of trustworthiness in information sources regarding food safety. This implies that different information sources have
different influences on people who exhibit different critical thinking styles aligning with the study of Lamm et al. (2011). Extension educators should be aware of the differences in audiences’ critical thinking styles and develop food safety programs utilizing various information sources tailored to both seekers’ and engagers’ information-use habits including social media that is both static and interactive. Efforts should also be made to collaborate with the news media and cooking shows to distribute credible and trustworthy food safety information. Future studies are recommended to examine the actual food safety-related information distributed in various information sources and the impacts of the information on audiences’ behaviors in multiple countries.

References
Extension Agent and Student Interactions during Study Tour, Agriculture in China: Production and Trade

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Keywords: Extension, study abroad, student interactions, China

Introduction

Study abroad experiences and associated research are certainly not new. Students have become increasingly aware of study abroad opportunities since the 1970’s (Estes, Hansen & Edgar, 2016), and their perceptions of the benefits have been positive. Even short-term study abroad trips are advantageous to agricultural students (Stevens, Smith & Downing, 2014) and the short duration is appealing (Beseli, Warner, Kirby & Jones, 2016).

Likewise, Extension agents gain from international experiences (Stevens, et al., 2014), and these opportunities enhance their skills and abilities to educate their clientele (Treadwell, Lachapelle & Howe, 2013). Advances in agriculture around the world have influenced Extension education (Richardson & Woods, 1991), and as globalization has impacted production and markets, agricultural issues have become more complex. By studying abroad, Extension agents can incorporate what they have learned internationally into their local programming (Ludwig, 1999).

It seems clear that students have benefited from the expanding study abroad opportunities and the interactions with teaching and research faculty. Similarly, Extension agents have gained knowledge from study abroad experiences that has helped them as educators. However, few programs are specifically designed to take advantage of the interactions of Extension agents and college students in global settings. The Agriculture in China: Production and Trade study tour was designed to combine the knowledge and experiences of students and agents, under the leadership of teaching and research faculty, in order to enhance their learning while in one of the United States’ largest agricultural trade partners.

Purpose and Objectives

Agriculture in China: Production and Trade had two primary purposes. One was to better prepare Extension agents to educate farmers and agribusinesses in their counties about international trade opportunities. The trip served as the third step of an Extension agent training
program. The first was a training on the basics of trade, and the second was a tour of ports and related facilities in the state.

The second purpose was to provide a 3 credit hour faculty-led study abroad course for college students. The course was open to all students who met the general study abroad requirements.

There were also overarching goals related to the integrated nature of the study abroad trip. They were as follows:

- Provide an educational experience that meets the needs of both students and Extension agents in the areas of agricultural production and trade.
- Explore the interactions of the college students and Extension agents.
- Identify areas in which the interactions strengthen the study abroad experience.
- Identify areas in which the interactions hindered the study abroad experience.

**Method**

There were three faculty leaders from three different University departments. There were ten Extension agents and six students. The students were undergraduates and graduate students.

The course consisted of three meetings and one required lecture/discussion class prior to travel. The meetings covered travel preparations including documentation, immunizations, packing tips, flight information, and other logistics. The lecture/discussion consisted of an overview of the day-to-day agenda, basics of Chinese culture, a review of assignments, and a question and answer time.

The study abroad portion of the course was for two weeks and included visits to Shanghai, Taian, and Beijing, China. Participants met with representatives of the Shanghai Agricultural Trade Office, faculty and students from local universities, local farmers, market managers, and representatives from multi-national agricultural organizations. The group toured the Port of Shanghai, cold storage facilities, markets, farms, gardens, universities, exhibitions, and cultural sites.

Extension agents and students had informal opportunities to interact such as during meals, on bus tours, and during cultural exploration tours. They also had more formal opportunities during lecture discussions and planned group reflection discussions. The leaders of the reflection discussions rotated between students and agents. The assigned leaders developed questions related to the tours and lectures, and these were discussed in a group setting. In addition, each individual was required to complete reflection questions developed by the course leaders.

**Conclusions**

A perception survey was completed before and after the trip by both students and agents. Overall, the agents’ perceptions of the interactions with the students were more positive than the students’ perceptions of their interactions with agents.

Also, during the trip, a reflection survey was completed by students and agents regarding how they interacted with the other group, how the other group hindered their experience, and how they enhanced it. There were aspects in which the interactions of students and agents strengthened the study abroad experience as well as aspects that hindered it.

One educational enhancement was that students had an opportunity to learn about the Extension system in China as well as in the United States. Additionally, one student began to
identify ways he could collaborate with agents on his research project. Another student began to examine the possibility of a career in Extension. Another positive was the exposure to a variety of questions and comments for both groups. Most of the comments and questions that Extension agents had during the tours and lectures related to implementation of ideas and concepts. Students admitted that those were not questions they would have thought to ask. Likewise, the students asked more technical questions, and agents said that these questions helped enhance their learning.

One area that seemed to be less positive was that students were more adventurous and were disappointed that the agents wouldn’t try more exotic foods or engage more deeply in the culture. However, the students’ adventurous spirits were seen as a positive by most of the agents and stated that the students helped them expand their experiences.

**Educational Importance**

College students are engaged in intensive learning about their specific subject matter. They are learning terms, procedures, processes, and theories, but may have limited experience in applying their knowledge beyond in-class projects or internships. In contrast, many agents may be removed from textbook and lab experiences but are constantly working with farmers, families, youth, and communities to implement solutions to real-world situations. The educational and experiential strengths and weaknesses of each group allowed for a richer educational experience.

**References**


Extension Professionals and Research Faculty Perspectives on Climate Change: Going from the United States to the Globe

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**Introduction**

Climate change has received increased attention, scrutiny, and debate among educators, policy makers, meteorologists, social and natural scientists, and others. In the agricultural sector, it is affecting all spheres—food production, food security, water resources, temperature, and so
Further, climate change causes major shifts in agriculture through altering the livelihoods of farmers in developed and developing countries around the globe. These include erratic monsoons, changes in agricultural zones, anthropogenic forest degradation, rise in sea level, non-availability of fresh water, floods, drought, storms, heat waves, and socio-economic factors (Smith P. et al, 2014). Adapting to these issues is essential to being able to handle their effects. Determining and utilizing best methods for reaching agriculturalists to assist in adopting new adaptation technology will be key to being pro-active in handling the effects from climate change, regardless of what country you are associated with. As World Bank 2016 data indicates: “Addressing climate change requires an unprecedented global cooperation across borders” (Climate Change, 2016). Determining methods that work in one country that can then be adapted and applied in other similar agricultural situations, encourages countries to learn from each other enabling the best responses climate change.

In 2014 the USDA Northeastern Climate Hub created an environmental vulnerability assessment for the northeastern region of the US. The report indicated general effects such as longer growing seasons and more extreme precipitation, as well as specific indicators including increased irrigation needs and sea level rise (Tobin et al, 2015). All of these stressors the International Panel on Climate Change (IPCC) also identified to be affecting other global areas as indicated in their specialized European chapter (Kovats et al, 2014). Here we see the potential to analyze countries which are similar in both environmental factors as well as socio-economic factors.

**Purpose and Objectives**
The overall purpose of this study was to share the results of the climate changes study conducted in the northeast United States and draw implications for international agriculture and extension education. Specifically, we describe:

- Extension professionals and research faculty perspectives on climate change including:
  - Constraints to climate change education
  - Adaptation and mitigation strategies
  - Preferred delivery methods to deliver climate change programming

**Methods and/or Data Sources**
The data from this study comes from a larger study entitled, Climate Change Capacity Discovery Study in the Northeast. The sampling frame for this study consists of all research faculty and all Extension specialists and educators in the colleges of agriculture who worked in program areas relate to agriculture, natural resources, or forestry at their universities, or in regional or county Extension offices across the 16 land-grant universities in the Northeast (N=3,757).

An online survey was developed using Qualtrics. Respondents were to indicate through semi-closed questions, the disciplinary areas of their climate change work, their current activities, the usefulness of listed information delivery methods, and a demographic information. The online survey was reviewed by a panel of experts comprised of Extension specialists, researchers and other faculty, field-tested and pilot-tested. The pilot test was conducted using faculty and Extension professionals in a southern state.

Data collection occurred during a six-week period in April-May 2015 and was guided by the Tailored Design Method (Dillman, Smyth, & Christian, 2009). After two follow-ups a total of 1,211 responded for a response rate of 32.2%. To analyze the data only respondents who had
least 1% of their time dedicated to climate change were considered. Of the 1,211 respondents, 554 (45.7%) met this criterion. Descriptive and inferential statistics were used to analyze the data.

Results

The report indicated the top three constraints to climate change education for Extension professionals and research faculty to be: a lack of climate information specified to local needs, a perceived lack of funding for faculty and staff, and target populations perceived changes to be too risky. In regards to adaptation and mitigation strategies, Extension professionals and research faculty mutually found water management to be a top adaptation concern. Concerning mitigation, Extension professionals and faculty found education and outreach to be a number one concern, while research faculty found nutrient management to be a top concern.

Extension professionals and research faculty’s preferred delivery methods include field tours, websites, and workshops, as the best methods for disseminating information. Results also indicated that field tours and workshops were useful delivery methods to change practices and behaviors as well.

Recommendations

This study has provided a wealth of information that is applicable to the United States as well as to researchers in other similarly developed and developing countries. Findings from this study offer a number of implementations for carrying research and education projects around the globe. Listed below are some of the recommendations for future research and actions:

1) Identify faculty and educators who are working on agriculture and climate change in developing countries in Africa and Asia.

2) Findings of this study had implications for developing educational programs for target audiences focused on climate change adaptation and mitigation strategies. Specifically designed for localized education in agricultural communities.

3) Potential exists for carrying out needs assessment in developing countries around the world regarding climate change so that informed decisions can be made to address climate change.

References


Factors Influencing Extension Agents’ Attitude towards ICTs in Trinidad and Tobago

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Keywords: ICTs, Extension Methods, Attitudes, Extension Agents, Trinidad and Tobago

Introduction and Theoretical Framework

Agricultural extension services have been rapidly evolving in response to emerging agricultural development issues (World Bank, 2012). In this changing context, extension agents are increasingly realizing new roles in the pluralistic systems for facilitating collaborative learning and knowledge management processes using an array of existing and emerging methods. These methods include farmer-filed schools, plant clinics, Information and Communication Technologies (ICTs), value chain (Faure et al., 2012; Davis & Sulaiman, 2014). It is expected that extension agents who are better equipped with these methods, especially emerging ICT tools, are likely to offer relevant and timely interventions to their clients (Maru 2014). In Latin America and elsewhere, it is evident that extension agent’s belief and attitude do not favour changes from technology transfer to take up roles of supporting new and emerging methods within the agricultural innovation system (Landini, 2015; Chowdhury et al., 2014). Reforms of agricultural extension in Trinidad & Tobago emphasize use of evolving extension methods, including ICTs as means of empowering extension officers to respond to beneficiaries faster, disseminate information to larger audiences, and save travel time and expenditures (Ganpat, Webster, & Narine, 2014). However, there is a paucity of evidence about attitude and mindsets of extension agents towards practicing these evolving methods, especially ICTs.

Purpose and Objectives

This study seeks to understand extant attitudinal dispositions of extension agents in Trinidad & Tobago towards practicing ICTs. Understanding attitude and mindsets of extension agents is important as it helps to determine the readiness of agricultural extension agents to use ICTs. By comprehending attitudes of extension agents as a component of their development and
training, it is possible to inform future policy making for effective and efficient use of ICTs in Trinidad & Tobago.

This study sought to:
1. Identify the attitudinal constructs of ICT use among extension agent in Trinidad & Tobago
2. Analyse the factors influencing extension agents’ attitude towards using ICTs.

**Methodology**

One hundred and sixty-nine ($N = 169$) extension agents of the Trinidad and Tobago Public Extension System, State assisted organizations and Private Extension service providers were targeted during March to May 2015 using self-reporting pilot tested questionnaires. The survey was conducted on a weekly basis on the mandatory office days of the agents. One hundred and sixty-three ($n = 163$) officers participated; yielding a 96% response rate. The reliability coefficients (Cronbach alpha) for the attitude concepts was .81

The survey instrument was a structured questionnaire with two sections; (a) seven demographic and job characteristics questions and; (b) eighteen attitudinal statements in four point Likert scale (‘strongly agree’, ‘agree’, ‘disagree’, ‘strongly disagree’). The instrument was examined for content validity by a panel of six extension experts and edited prior to administering. In addition to descriptive statistics, data were analyzed using Principal Component Analysis (PCA) to identify the attitudinal construct and Ordinary Least Squares (OLS) regression to analyse the factors influencing attitude of extension agents toward using ICTs.

**Findings and Conclusions**

The majority of respondents (95%) belonged to the Public extension service field agents. Agricultural Extension Aides (AEAs), Agricultural Assistants I, II were the highest category (85%) while 11% and 4% were Agricultural Officers (AOs) and supervisors respectively. A large number of the agents were between the ages of 18-30 years (44%) and 52% were males. Most officers had 1-5 years of working experience (52%). More than one-third of the respondents (38%) completed undergraduate and graduate degrees. In terms of specialization, majority of the agents (52%) had extension expertise, followed by specialization in crop production, and only a few (2%) possessed expertise in administrative services. The majority (65%) earned $TT 5,000 to $7,000 (Trinidad and Tobago Dollars).

The PCA extracted four constructs from 18 attitudinal items. These four constructs/factors were named as resource use, service goals, capacity development, perceived efficacy. These constructs collectively accounted for about 46.60 percent of the variations in the attitudes of the extension agents’ towards using ICTs. The individual influence of the construct ranged from 7% to 18%. The regression analyses, which were carried out on the constructs, showed that the level of education had a significantly positive influence on the agents’ perception of service goals. Those with the higher levels of education were more than twice cognisant of service goals.

The age of the extension agents had a significant positive impact on their perceived efficacy and client satisfaction in the delivery of extension services. The variables such as, category of worker, gender, expertise and work experience were positively influencing the agents’ capacity development attitudinal construct.

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**Recommendations, Significance, and Impact**

The findings of the study indicated that *resource use, service goals, capacity development, and perceived efficacy* are major constructs of extension agents’ attitude towards ICT use in Trinidad & Tobago. Therefore, extension policy encouraging ICT use in agricultural extension should be supported with adequate resources, and aligned with the institutional goals. Furthermore, necessary initiatives should be taken up for capacity development to exploit the potentials of ICTs in agricultural extension services, as they perceived ICT as important means of improving their service efficacy. The findings of the regression analysis indicates that educational qualification is an important determinant of perceived service goal, and hence policies should be framed to encourage improving educational qualifications of the extension agents.

Furthermore, training and personnel development should focus on reflexive learning processes of extension agents as means to enable favorable attitudes towards use of ICTs. There should be ongoing programme appraisals to determine agents’ skills and capabilities with the aim of identifying achievements and deficiencies in making necessary transitions towards use of ICT in extension delivery.

**References**


Factors Influencing Public Perceptions and Support of Locally Grown Food in Taiwan

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Keywords: locally grown food, food security, public opinion, extension education

Introduction
Taiwan is a developed country facing food insecurity due to limited farm lands and natural resources, increased population, small farm operation system, impact of trade liberalization on agricultural products, and conflicts between government policy and the agricultural industry (Chen, Shih, Chang, & Hsu, 2015; Kuo, 2013; Luo & Huang, 2003; Peng, 2011). Despite this, limited social or political actions have been taken to address food insecurity because the general public still has access to food, resulting in minimal concerns about the issue (Peng, 2011). The Taiwanese general public has been reported to have a low perceived knowledge level, a fair level of awareness of food insecurity, and has experienced food insecurity to some degree (Huang & Lamm, 2016). To alleviate the food insecurity situation in Taiwan, public support of locally grown food may revitalize the agricultural industry and increase the food self-sufficiency rate (Council of Agriculture, Executive Yuan, 2011). Extension needs to support agricultural sectors to strategically maintain and improve food security (Roberts, Ganpat, Narine, Heinert, & Rodriguez, 2015); however, in Taiwan, additional efforts should be made to reach consumers by educating them about food consumption and the need to sustain the food system (Tung, 2001). By understanding the cognitive factors that may influence public support of locally grown food in Taiwan based on the theory of planned behavior (Ajzen, 1991) and social cognitive theory (Bandura, 1986), guidance can be made to facilitate extension educators’ programming to maximize support of locally grown food and mitigate food insecurity in Taiwan.

Purpose and Objectives
The purpose of this study was to identify the relationships between factors that may influence public support of locally grown food in Taiwan in order to guide extension educators’ efforts. The objective of this study was to identify the relationships between public (a) knowledge, experience, and awareness of food insecurity issues, (b) attitudes toward locally grown food, (c) perceptions of the social pressure to make locally grown food purchases (subjective norm), (d) perceptions of availability, affordability, and accessibility of locally grown food (perceived behavioral control), (e) intention to purchase locally grown food, and (f) demographic characteristics.
Methods and Data Sources

A correlational study was conducted using an online survey. The survey instrument was researcher-developed in English, reviewed by an expert panel, translated into Taiwanese Traditional Chinese, and reviewed by a Taiwanese panel of experts. Prior to data collection, a pilot test was conducted to ensure the instrument is valid and reliable.

The population of interest was residents living in the northern region of Taiwan. This specific region was chosen because this is the region with the greatest population making food choices. A non-probability opt-in sampling procedure was used to collect responses. A total of 419 complete responses were received from 991 respondents entering the survey, resulting in a 42% participation rate. Data were analyzed using SPSS® 23.0.

Five-point Likert-type scales were used to measure respondents’ knowledge of food insecurity issues (seven items), subjective norm (six items), perceived behavioral control (six items), and intention to purchase locally grown food (eight items). Respondents’ attitudes toward locally grown food were measured using a five-point semantic differential scale with eight sets of bipolar adjectives. To measure respondents’ food insecurity awareness, 10 knowledge questions with one true correct answer per question related to food insecurity issues in Taiwan were used, and then awareness scores were calculated by summing the number of questions answered correctly. As for experiences of food insecurity issues, the measurement was comprised of six statements that respondents can select all that apply with the Other option. Lastly, respondents were asked to answer demographic questions, including sex, age, city of residence, area of residence, agricultural involvement, number of dependent children, and being the decision maker of food purchase in the household.

Results

No significant correlations were found between knowledge, experience, and awareness of food insecurity issues with intention, while all the relationships between attitudes, subjective norm, perceived behavioral control, and intention were significant and positive. In terms of demographic characteristics, positive relationships were found between intention and having dependent children ($r = .10, p = .04$), being the decision-maker of food purchase in the household ($r = .29, p = .01$), living in Taoyuan City ($r = .23, p = .01$), and living in Hsinchu City ($r = .12, p = .02$); while negative relationships were found between intention and living in New Taipei City ($r = -.18, p = .00$) and living in Hsinchu County ($r = -.12, p = .01$). Additionally, significant inter-correlations between food insecurity-related variables, theory of planned behavior variables, and demographic variables were also found.

Conclusions, Implications, and Recommendations

The findings indicated the general public’s attitude, subjective norm, and perceived behavioral control can positively influence their intention to purchase locally grown food, which aligned with Huang’s (2014) and Chang’s (2011) studies but opposed Peng’s (2011) statement. Although no relationship was found between knowledge, experience, and awareness of food security issues and intention to purchase locally grown food, the inter-correlations between variables related to food insecurity, theory of planned behavior, and demographics revealed the existence of cognitive and experiential differences among individuals with different demographic characteristics (Bandura, 1986). While such findings showed the complexity of the interactions between variables, they also implied efforts can be placed on factors that showed stronger influences on intention to support locally grown food, such as subjective norm, perceived
behavioral control, and being the decision maker of food purchase in the household. Extension educators in Taiwan should develop new programs or modify existing programs encouraging consumers’ support of locally grown food with better persuasiveness and effectiveness by incorporating the impact of important individuals, such as families, on the audiences’ food purchasing decision, educating the facts about purchasing of locally grown food, and targeting specific audiences who are the decision maker of food purchases in a household. Future studies are recommended to explore if regional differences exist in less urbanized regions of Taiwan so that extension educators can develop and implement the programs with enhanced effectiveness and greater impacts in these areas.

References


Introduction/Conceptual Framework/Review of Literature
The world is becoming increasingly urban. According to United Nations (UN; 2014), the percentage of people living in urban areas is higher than that of rural areas globally. In 2014, 54% of the global population resided in urban areas and this figure is projected to increase to 66% by 2050. With the increasing number of people living in urban areas, countries with faster urbanization rates face challenges to sustainable development (UN, 2014). Society has become different and more complex as a result of urbanization, rural-urban shifts, changes in global economy, advancements in science and technology, and several other changes in social and environmental factors (Extension Committee on Organization, & Policy and Cooperative State Research, Education, and Extension Service Strategic Framework Team, 1995).

Complex problems, such as youth development, financial challenges, health issues, food security, environment quality degradation, water scarcity, poverty, unemployment, and illiteracy, present opportunities for extension in urban and suburban areas. However, “extension is not visible in the urban populations” (Nelson-Smith, 2011, para.1). Participation in Extension programs, use of Extension resources, and awareness about Extension, has been reported as low among urban communities (Christenson & Warner, 1985; Jacob, Willits, & Crider, 1992; Warner, Christenson, Dillman, & Salant, 1996). Since Extension originated targeting rural communities, its emphasis still remains there, while the Extension services in urban areas display poor organization and emphasis (Panshin, 1992).

The conceptual framework for this study (Figure 1) consists of three important aspects of a successful urban extension program: professional development, program delivery modes, and perceptions.
Purpose

The purpose of this study was to synthesize available literature on the current status of urban extension in the United States to create a holistic picture that informs urban extension programming in urban and urbanizing areas globally.

Methods

Primary and secondary literature were collected from journals, books, and other internet sources using key words such as urban extension, urban program planning, and urban extension agents. Priority was given to recent literature that was published during last decade.

Results

Results are presented according to the three main components presented in the conceptual framework.

Professional development in urban settings

The effectiveness of an Extension organization can be determined by the ability of Extension agents, in designing, delivering, and evaluating effective educational programs (Lakai, 2010). “There are no models of an Extension agent’s role, which are applicable to all situations. An agent must consider each situation individually and adopt a position or role suitable to that situation” (FAO, 2016, para. 4).

Because of the unique nature of urban settings, distinctive competencies and have been identified as needed by urban Extension agents. (Fehlis, 1992; Webster & Ingram, 2007). Examples for those competencies for urban areas are cultural competence, inclusivity, and capacity building (Krofta & Panshin, 1989; National Urban Extension Leaders, 2015). “This uniqueness of urban environments has created a need for Extension agents in urban areas, to be
competent in managing grants, contracts, use of social media, and other multiple skills” (National Urban Extension Leaders, 2015, p. 9).

Extension program delivery modes

According to Fehlis (1992), Extension programs, techniques, and delivery methods need to take into account the diversity and commonalities between rural and urban areas, in order to plan effective Extension programs. Fehlis (1992) reported that different programs, delivery methods, and resources need to be used to address the same problem in urban areas, with respect to rural areas, because of the difference in context, issues, preferences, and practices. Most existing Extension materials have been adapted from rural experiences and therefore, relating them in meaningful ways to urban perspectives has been a problem (Argabright, McGuire, & King, 2012; Borich, 2001; Krofta & Panshin, 1989; Webster and Ingram, 2007).

Perception about urban extension programs

Perception includes perceived importance of urban extension programs and barriers faced by extension agents. Lack of human, financial, and other resources has been highlighted as one of the main problems in delivering effective urban extension programs. Kerrigan (2005) studied future practices for urban county offices and highlighted the importance of altering communication practices of urban county offices. “The cost of these technologies and the expertise required to use new technologies for educational outreach impact urban Extension’s ability to remain on the cutting edge of educational outreach” (Kerrigan, 2005, p. 6). Because urban areas are becoming increasingly complex and have multiple organizations to offer services, Kerrigan (2005) suggested having networks and collaborations among these service providers to avoid duplication of programs. Available literature regarding the perceived importance of extension agents about extension program is very limited or possibly unavailable.

Conclusions and Recommendations

More than half of the world’s population lives in urban areas, who represent vast diversity socially, economically, politically, and environmentally. Despite the country of operation, the ultimate goal of extension is to improve the livelihood of their clientele. Therefore, the role of extension in addressing the challenges of urbanization is important. According to the findings of this literature review, there is a need to tailor extension programs that address various diversities of urban populations around the world. Competencies needed to work in urban areas are different from that of rural areas. Therefore, identifying those unique competencies and offering professional development opportunities for urban extension agents in areas of communication technology, funding, handling diversity, and program evaluation is important for the success of urban extension programs. This study revealed a substantial gap in the literature reflecting the needs of rapidly growing urban audiences. A final and important recommendation is that more research is needed in that area to inform successful urban extension programs globally.

References


Farmer to Farmer: Building Bridging Networks and Leadership Skills among Farmer Associations in Morocco

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Introduction

In Morocco, like in many countries, agricultural development relies on strengthening the economic potential of its rural regions. Recent government programs have given special attention to actions that encourage establishing farmer-based associations. However, small rural producers lack the leadership skills and strategic planning capabilities to sustain the farmer-based associations for the long-term. The Morocco Rural Leadership Farmer-to-Farmer (F2F) Program brought together University of Minnesota Extension staff with faculty at the National School of Agriculture in Morocco (ENA) to co-design and teach a leadership development cohort program for men and women farmers intended to enhance long-term sustainability through enhanced social capital and networks.

Literature Review

Sustainable development is given a high priority in the literature. While sustainable development has multiple perspectives, this rural leadership program was developed to target building leadership capacity within the farmers associations in Morocco as a contribution to long-term sustained development through skill development to strengthen rural associations and cooperatives. This is often referred to as social capital or “the norms and networks that facilitate collective action” (Lehtonen, 2004; p. 204).

During the past several decades, the emphasis in agriculture development has shifted from commodity production to systems thinking in value-chain development (USAID, 2013). Support for value-chains accompanied the programmatic shift to position farmers for export markets through rural enterprise development. The Morocco Green Plan (Agence pour le Développement Agricole, 2013) calls for aggregating small-scale farmers to link the production
of commodities to the processing and marketing industries of local communities based on integrated value-chains capturing more of the market opportunities.

Abbey, Tomlinson & Branston (2016) identify governance and social capital as both significant components to operate value-chains because of facilitated coordination, collaboration and compliance by all farmers, traders, exporters and consumers. They state that “…more dynamic agricultural communities are characterized by a high degree of social capital and trust” (p. 155). Furthermore, Bantilan & Padmaja (2008) support efforts in leadership development for sustainable development of rural communities, stating: “…social capital plays an important role in fostering the social networks and information exchange needed to achieve collective action and sustain a social and institutional environment that is ready to adapt and change.” (p. 63)

Purpose and Objectives

The purpose of the Morocco Rural Leadership Farmer-to-Farmer (F2F) program was to bring together the University of Minnesota Extension staff with faculty at the National School of Agriculture in Morocco to co-design and teach a leadership development cohort program for men and women farmers. Using the theoretical framework of a cohort model, the objectives were to develop a leadership program that would strengthen rural-based farmer associations by increasing networks and leadership capabilities of the farmers. Strong and effective associations will improve productivity, decrease production loss and increase rural household incomes for the long-term.

Methodology

The leadership program developed through a collaborative process in three specific components. Curriculum needed to be designed to provide leadership skill training taking into consideration the context of small, rural Moroccan cooperatives. To accomplish this, the first component involved Minnesota Extension staff preparing drafts of training activities presented to a team of four Moroccan faculty for adaptation. The second component included training-of-trainer activities with Moroccan faculty using the materials, including virtual and in-person sessions. The third component focused on Moroccan faculty applying the leadership training activities with a cohort of 22 farmers - 12 men and 10 women – who serve as leaders of farm-based associations. The cohort group met three times for three-day sessions over a nine-month period. The breaks between sessions allowed the Moroccan leaders to apply a strategic planning process with their associations based on the training materials.

The leadership training targeted four characteristics: leader, relationship, thinking/learning and contextual understanding. Cohort members learned and practiced tools, including group decision-making, preparing/facilitating a meeting agenda, creating a shared vision and developing action steps to reach that vision. Three alumni of the Minnesota Agriculture and Rural Leaders (MARL) Program accompanied Extension staff to share their experiences in leadership and agricultural associations.

Results

Evaluation data based on a mixed methods design were collected at three points in time: at the first session, during the last session and one year after program completion. Evaluation measured changes in the farmers’ leadership competency, association networks and behavior. Pre-post assessments using 14 attributes on a Likert-scale survey revealed significant increases in 11 of 12 leadership competencies. The Social Network Analysis survey showed an increase
from 53 connections by cohort members to 138 connections by the cohort—an average of 3.1 to 8.1 connections per farmer—one year later. Qualitative data was gathered on farmers’ commitment to actions at three points in time: following each session, at the program’s conclusion and one year later. Results revealed major change in decision-making and application of critical thinking skills; increasing participation in meetings via discussion and active listening; and how their associations communicate and problem-solve.

**Conclusion and Implications**

Minnesota is part of an increasingly connected global society which benefits from exchanges in education, research and development. For many countries, just like for Minnesota, development depends on strengthening their rural regions. While a country like Morocco differs in many ways from Minnesota, rural leadership works according to many of the same principles. Expanding networks and successful farmer associations is critical to strengthening the economic potential of rural regions. This requires agricultural and extension education practitioners being knowledgeable in the principles of building social capital and skilled in working cross-culturally. In addition, the program was created with specific components to insure the sustainability and durability of the program and associations. The same strategies created and implemented in the Morocco program could be easily modified to work in multiple cultures around the globe.

**References**


Farmers’ Perceptions of News and Information Disseminated After the Cessation of Armed Conflict: An Assessment in the Republic of Mali

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Keywords: armed conflict, livelihoods, media, recovery

Introduction/Theoretical Framework/Review of the Literature

“Conflicts are a central part of human organization, and so are attempts at solving them” (Megwa, 2009, p. 30). Armed conflict is defined as “a contested incompatibility that concerns government or territory or both where the use of armed force between two parties results in at least 25 battle-related deaths” (Eriksson, Wallensteen & Sollenberg, 2003, p. 619).

The Republic of Mali was ranked among the 25 poorest countries in the world in 2013 with a GDP per capita of 700 U.S. dollars (CIA, 2014; Solomon, 2013). Mali experienced a military coup d’état in March of 2012 followed by significant armed conflicts in its northern region (Solomon, 2013). As a consequence, about 550,000 people were displaced internally and externally (Internal Displacement Monitoring Centre, 2014). Moreover, the northern part of Mali was transformed into a safe haven for separatist and Islamist groups causing interruption in agricultural and food production (Dowd & Raleigh, 2013; Solomon, 2013).

This study was guided by several media effects theories and the social cognitive theory of mass communications (Bandura, 2001; Severin & Tankard, 2001). The Agricultural Knowledge and Information System for Rural Development (AKIS/RD) model was also used to support understanding the phenomenon (FAO & The World Bank, 2000).

Purpose and Objectives

This study assessed farmers’ perceptions on the role of the media and other information sources, including Extension/advisory services, in disseminating news and information after armed conflict in Mali. Three research questions guided this study:
1. What were selected personal and professional characteristics of farmers who experienced armed conflicts?

2. How did farmers perceive the role of the media and other information sources in disseminating news and information to assist with their economic livelihood recovery?

3. How did farmers perceive the role of the media and other information sources in disseminating news and information to assist in (re)building community resilience?

Methods and/or Data Sources

The study’s population included farmers living in post-conflict regions of Mali. The 106 participants were selected purposively, including crop producers, livestock owners, poultry producers, market gardeners, fishermen, and other rural citizens from the regions of Mopti and Timbuktu.

A survey questionnaire was used to collect data. It included a modification and adaptation of the Communities Advancing Resilience Toolkit (CART) instrument developed to evaluate a community’s resilience (Pfefferbaum, Pfefferbaum, Neas, Fran, & Van Horn, 2013). New constructs, items, and scales were added to the modified CART instrument based on a review of literature. The first part consisted of 12 primary questions with several items related to each, and included five-point, summed-rating scales (e.g., 1 = Not interested at all to 5 = Extremely interested). The questions asked about farmers’ primary information sources, preferred language for receiving news and information, frequency of receiving information on agriculture and food topics, and other related interests after armed conflicts. The second part included items describing the farmers’ personal and professional characteristics. The questionnaire was administered orally in the participants’ preferred languages.

A panel of experts at Oklahoma State University reviewed the instrument to ensure its content and face validity. A pilot study tested the instrument’s internal consistency and face validity; post-hoc reliability estimates ranged from .58 to .90. Descriptive statistics were used to analyze and report the data.

Results, Products, and/or Conclusions

The farmers’ ages ranged from 18 to 81 ($M=45.45$); 78.8% were male and 21.2% female. A large majority (93.3%) had less than a high school degree; 89.4% were married. Nearly all were Muslims and about two-thirds indicated producing staple and/or cash crops.

Most farmers (95.3%) preferred receiving information and messages from the media and other sources in their local languages. They (66.2%) were extremely interested in receiving media programs on agriculture, weather forecasts, market news, general news, hygiene and sanitation, health and nutrition (median = 5). More than one-half (53.0%) perceived information and messages received were extremely related to topics about non-GMO seeds, post-harvest technologies, market gardening, plant diseases, farmer interest groups, and natural resources (median = 5).

A large majority (83.7%) viewed information and messages about agriculture and food were shared very frequently by radio (median = 5). However, 81.8% indicated information about food and agriculture was never shared on the Internet or in newspapers (median = 1), and about one-half (46.7%) said never via their mobile telephones (median = 2). Only slightly more than one-third (34.4%) very frequently received information about child labor and the role of women in agriculture via radio or television, or from extension agents (median = 4). However, 69.2% indicated they very frequently received information about strategies for conflict resolution via
television or radio (median = 5). Most agreed the media and other sources of information contributed to resilience building within their communities after armed conflict ended ($M = 3.93$).

**Implications and Recommendations**

The media, because of their power, are important change agents and play an essential role in complex social systems (Severin & Tankard, 1992). Media effects theories and the AKIS/RD model (FAO & The World Bank, 2000) applied to the study and served in formulating recommendations. Media and other information sources should provide informational programs in farmers’ local languages. Their focus should be on agriculture and food production, natural resources, environmental issues, and health and nutrition targeting farmers who experienced armed conflicts. In addition, more strategies are needed for using mobile telephones to inform farmers who experienced armed conflicts. The Internet access of rural citizens also must be improved. Moreover, the government and its development partners should develop initiatives to promote adult literacy and numeracy to facilitate the reading of newspapers. Extension and other advisory services should be key players in initiatives intended to improve farmers’ access to reliable news and information after conflicts. Additional research should be conducted about the perceptions of media professionals, extension agents, NGO personnel, and other stakeholders regarding their contribution to the economic recovery of farmers and to (re)building community resilience after armed conflict ends.

**References**


How the Improved Chicken Crossed the Road: Assessing Strategies to Implement a Chicken Breeding and Distribution Program for Smallholder Family Poultry Producers

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Keywords: smallholder family poultry, African chicken production, poultry breeding programs, breeding and distribution models

Introduction
Advances in breeding and biotechnologies revolutionized the commercial poultry industry over the past five decades as researchers unlocked capacities to strategically breed for high-yielding chicken strains and resistance to certain stressors and disease (Cheng, 2010; Derry, 2015; Hoffmann, 2005; Thiruvanckadan, Prabakaran, & Panneerselvam, 2011). While the commercial poultry system has expanded globally, smallholder family poultry (SFP) remains widespread and is especially important in developing countries where an average of 80% of all poultry is raised in this scavenging, low-investment system (Guèye, 2000; Sonaiya, 2008). Recently, governments and development agencies have recognized SFP producer’s constraints including low productivity and high mortality rates from endemic viruses such as Newcastle Disease (ND). Breeding technology could greatly benefit and build resiliency of SFP production systems, but it remains difficult to bridge the gap between technology and the smallholder farmers.

In 2013 a multi-university partnership launched a research initiative to develop a chicken strain with improved resistance to ND using genomic techniques with labs in Ghana, Tanzania, and the US. This innovation has important implications for SFP producers, as they currently face flock losses of up to 90% when hit by this virus (Permin, Riise, Kryger, Assoumane, & Schou, 2006). A crucial component of this program is to develop and implement a sustainable chicken breeding and distribution program is to develop and implement a chicken breeding and distribution program that is accessible to smallholder farmers. In August of 2015, a one-year research initiative was launched to identify and assess models and strategies used to breed and distribute improved strains of chickens to SFP producers.

Purpose & Objectives
The purpose of this research was to identify key criteria and provide recommendations for designing and implementing a breeding program that is accessible and meets the needs of SFP producers.
Objectives for the study were to:
1. Examine past and current strategies to breed improved chickens for the SFP system in African and Asian countries.
2. Evaluate models of distribution.
3. Identify desired poultry traits by SFP producers.

Methods
An exploratory concurrent mixed methods design was used for this research. A literature review was first conducted to identify and assess chicken breeding and distribution program models implemented in African and Asian countries. Models were then critiqued to determine important criteria for developing and implementing an effective chicken and distribution program accessible to smallholder poultry producers. A qualitative, participatory workshop was conducted with purposefully selected poultry experts from Tanzania, Cameroon, Ghana, Kenya, and the United States to evaluate the models and to determine best practices for a new poultry breeding program. An online questionnaire was then administered to further examine models of distribution and identify SFP producers’ desired poultry traits.

Results
Successful chicken breeding and distribution programs require a comprehensive, integrated approach to ensure sustainability. A 17-point scoring system was designed based off of top 5 priority criteria identified in the poultry expert survey and relevant literature. This was used to assess models proposed by poultry experts and in assessments of five unique models used in current and past programs. The following five considerations were identified as critical to program success:
1. accessibility;
2. infrastructure;
3. training and education;
4. health and biosecurity;
5. appropriate breed and technology.
These criteria were utilized in developing a scoring system to assess the viability of five unique breeding and distribution models. Model 1, the open-nucleus breeding scheme as executed in Malawi (Gondwe, Wollny, Safalaoh, Chilera, & Chagunda, 2003), and model 3, the Rakai Chicken Model of programmed hatching in Uganda (Roothaert, Ssalongo, & Fulgensio, 2011), performed best in both a rural and urban setting. This scoring system provides a tool to conduct baseline assessments of a model’s potential performance in an area, but deeper, site-specific evaluations are essential prior to program implementation.
The following recommended steps were also identified for program development:
Step 1: Establish a local program steering committee;
Step 2: Perform local assessment;
Step 3: Identify breeding goals;
Step 4: Identify appropriate breed and technology;
Step 5: Foster an enabling environment.

Recommendations
Past models of breeding and distributing improved chickens to smallholder farmers provide important examples, but illustrate the complexity of implementing such a program. New
programs can learn from these previous efforts, but they must be customized to local breeding goals, culture, and available infrastructure. Further site-specific research is needed prior to attempting to implement a program. The following activities are essential and should be carefully navigated in order to develop appropriate programs that reflect SFP producers’ needs:

- Focus on indigenous breeds and appropriate technology;
- Conduct site-specific economic analyses of each model;
- Assess policy level considerations;
- Explore potential partnerships, for example with private companies, national and international poultry associations, and shared interest groups;
- Understand gendered roles of SFP production in order to create gender responsive programs.

References
Identification of Food Safety Culture Barriers to Implementing Effective Change for Regulatory Compliance in Honduras and Panama

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Keywords: Food safety, FSMA, Food safety culture, Focus groups, Good Agricultural/Management Practices

Introduction
According to Centers for Disease Control and Prevention (CDC), 48 million people (1 in 6 Americans) get sick, 128,000 are hospitalized, and 3,000 die each year from foodborne diseases. The Food and Drug Administration’s (FDA) Food Safety Modernization Act (FSMA) was signed into law in 2011 (U.S. Department of Health & Human Services / Food & Drug Administration, 2011) to change the inspection of FDA-regulated products, including produce, from reactive to proactive. According to a report by the Department of Agriculture's Economic Research Service, depending on the time of the year up to 60% of fresh produce is imported (CDC, 2012). FSMA regulations include verifying imported products meet the same food safety standards to which the domestic food industry is held (Andrews, 2014). For many Latin American countries, reducing barriers to agricultural trade is on top of the list for a successful trade agreement (Hornbeck, 2011). According to the American Council on Education (1995) there is a growing opportunity for extension specialist and international agriculture development programs to collaborate and aid developing countries build their food safety capacity (as cited in Weir & Maredia, 2006). However, implementation of these food safety programs will require a change in motivation and behavior improving food safety culture. According to Yiannas (2009) food safety culture can be viewed as how the organization handles food safety and what the employees perception about it. The Health Action Model (HAM), modified by Rennie (1995) was used as framework for this study: “(a) knowledge system: baseline food safety knowledge;
(b) normative system: worksite norms and rules; (c) motivational system: motivational elements in the company; (d) belief system: values and beliefs of the target audience; and (e) worksite environmental system: worksite physical conditions” (as cited in Nieto, 2006, p.758).

**Purpose**

The purpose of this study was to identify food safety culture attitudes, perceptions, and potential barriers for implementation of FSMA regulations by workers in selected fruit and vegetable processing plants in Honduras and Panama.

**Methods**

This qualitative study utilized focus group interviews to collect information from the target audience. Focus group participants consisted of workers of selected processing plants from Honduras and Panama that export fruits/vegetables to the U.S. and volunteered to participate in this study. Six focus groups with five to six participants each were conducted in order to identify food safety culture barriers for implementation of FSMA. Four produce plants participated in the study, two in each country. Interviews were conducted in Spanish and recorded. Afterwards, transcripts were coded using NVIVO® software and relevant quotes were translated into English. For the analysis of the study, grounded theory methods were used, including open and axial coding to identify emerging themes which described food safety culture attitudes of workers.

**Results**

The following seven themes emerged and were linked to the HAM framework. Figure 1.

![Figure 1. Focus group-identified themes linked to the HAM framework](image)

**Culture theme.** Refers to the habits and perceptions workers have towards food safety inherited from their cultural background including family, social environment, and specific cultural values embedded from childhood.

**Education theme.** Education differs from training because the latter focuses more on teaching how to do food safety, instead of teaching the importance of why we do food safety.
According to focus groups participants, education can also have a ripple effect on workers’ personal life because what they learn at work they try to transfer at home. Figure 2.

**Figure 2.** Culture and Education theme relationships

**Food safety theme.** As an umbrella term of the study, it encompasses three subthemes: (1) food safety definitions, (2) causes of food safety hazards, and (3) consequences of food safety hazards.
Needs and Resources theme. This theme provided the opportunity to participants to offer recommendations and topics of interest for potential trainings. Recommendations ranged from providing better accommodations, finding alternatives for work efficiency, to leadership attitudes by providing positive reinforcement and incentives to workers.

Training theme. Trainings provide the tools to teach how to do food safety to workers. Participants mentioned how, regardless of training received, there are still workers who are not willing to do the things they are taught because they are simply not willing to change. For future trainings, they are interested in learning about ethical/moral aspects to help improve workers’ fellowship.

Rules theme. Including norms established by the organization, such as: (1) Reporting illness, (2) Uniform, and (3) Hand Washing, and (4) Supervision. There were different opinions regarding the level of supervision needed, from watching their backs all the time to a more trusting environment. Figure 3.

Figure 3. Rules, Food Safety, Training, Needs and Resources theme relationships
**Social theme.** Refers to existing relationships in the organization, this includes (1) Fellowship among coworkers and (2) Worker-supervisor relationship. An interesting aspect that emerged was bad intentions, participants mentioned how sometimes there could be bad intentions among workers to make other workers or even their supervisor look bad. Figure 4.

*Figure 4. Social theme relationships*

**Conclusions/Recommendations**

In general, focus group participants did not have a clear concept of what food safety means. Most importantly, some participants did not believe someone could die from foodborne...
illness. Participants indicated how receiving training helps them by applying their learning at home, which had indirect impact on their cultural views. Recommendations can be directed towards training/educational efforts which should emphasize teaching workers “why” it is important to follow food safety practices. It is important to include an ethical/moral component to training to improve food safety culture by targeting soft skills that can influence changes in behavior towards food safety. Training should be culture sensitive by respecting cultural beliefs, values, and traditions. As Yiannas (2015) mentioned, targeting values and linking them to food safety will result in workers who are more likely to comply. Training should include food safety components that workers can transfer to the home environment. It is key to conduct regular evaluation of training on attitudes, perceptions, and knowledge of workers.

References
Improving a Wetlands Conservation Training Program Using Program Evaluation

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Keywords: wetlands conservation, blended course design, formative evaluation, mixed-methods

Introduction
Well-designed evaluation plan and methods are required to adequately assess the effectiveness of a program (Gandhi et al., 2007). Chen (2015) stated that stakeholders are primarily interested in evaluations that are improvement- and accountability-oriented. Based on this purpose distinction, evaluations are termed formative (improvement-oriented) and summative (accountability-oriented). Formative evaluation helps a program achieve its anticipated outcomes and impacts. Patton (2011) indicated that formative evaluation fine-tunes a planned model and fixes any issues during implementation. This paper discusses how results from a formative evaluation were used to improve a training program related to wetlands conservation.

Purpose and Objectives
The goal of this project was to train federal government employees on a tool they would use for screening wetlands. A pilot field day was offered to test the teaching-learning process and to gather feedback on areas for improvement before such field days could be offered at 24 different locations throughout the continental United States.

Methods
The project team consisting of conservation, plant identification, hydrology and instructional design specialists developed a blended wetlands course that included an online course combined with a classroom/field training. A mixed-methods design was adopted to evaluate the pilot field training, as collecting data using different methods strengthens program evaluation (Patton, 2002). A brief paper survey was administered at the end of the field day followed by two focus group interviews—one with 11 students and the second with the project’s National Steering Committee members. All 29 field day participants completed the survey. In addition, the project evaluator participated in the classroom/field day and observed the
proceedings using a structured observation guide. Patton (2015) stated that an evaluator’s understanding of the program is enhanced when they attend and observe the programs, and systematically document what they observe. All the evaluation instruments were developed by the evaluator in consultation with the project team.

Results

After completing the online course and attending the field day, about 75% or more of the participants rated themselves *quite* to *very* knowledgeable and comfortable on all the taught aspects related to wetlands, except on the different federal wetlands laws and regulations (Tables 1 and 2).

Table 1. Frequency distribution of field day participants on their level of knowledge on aspects taught at the field day

<table>
<thead>
<tr>
<th>Item</th>
<th>Not at all</th>
<th>Slightly</th>
<th>Moderately</th>
<th>Quite</th>
<th>Very</th>
<th>Median</th>
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</thead>
<tbody>
<tr>
<td>Using Wetlands Mapper for pre-screening</td>
<td>0 (0%)</td>
<td>1 (3%)</td>
<td>7 (24%)</td>
<td>13 (45%)</td>
<td>8 (28%)</td>
<td>4.00</td>
<td>.82</td>
</tr>
<tr>
<td>Using Web Soil Survey to identify hydric soils</td>
<td>0 (0%)</td>
<td>0 (0%)</td>
<td>8 (28%)</td>
<td>12 (41%)</td>
<td>9 (31%)</td>
<td>4.00</td>
<td>.77</td>
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<tr>
<td>The different federal laws and regulations related to wetlands</td>
<td>0 (0%)</td>
<td>3 (10%)</td>
<td>16 (55%)</td>
<td>6 (21%)</td>
<td>4 (14%)</td>
<td>3.00</td>
<td>.86</td>
</tr>
<tr>
<td>Identifying key potential wetland hydrology indicators</td>
<td>0 (0%)</td>
<td>0 (0%)</td>
<td>4 (14%)</td>
<td>17 (59%)</td>
<td>8 (28%)</td>
<td>4.00</td>
<td>.63</td>
</tr>
<tr>
<td>Identifying key potential wetland vegetation indicators</td>
<td>0 (0%)</td>
<td>0 (0%)</td>
<td>5 (17%)</td>
<td>17 (59%)</td>
<td>7 (24%)</td>
<td>4.00</td>
<td>.65</td>
</tr>
<tr>
<td>Using the Field Guide to identify wetland plants</td>
<td>2 (7%)</td>
<td>0 (0%)</td>
<td>3 (11%)</td>
<td>16 (57%)</td>
<td>7 (25%)</td>
<td>4.00</td>
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The sample size ($n$) was 29 for all the items except the last one (Using the Field Guide to identify wetland plants) which had $n$ of 28.

Table 2. Frequency distribution of field day participants on their level of comfort on aspects taught at the field day ($n=29$)

<table>
<thead>
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<th>Item</th>
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<tr>
<td>Using Wetlands Mapper for pre-screening</td>
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<td>0 (0%)</td>
<td>5 (17%)</td>
<td>13 (45%)</td>
<td>11 (38%)</td>
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<tr>
<td>Using Web Soil Survey to identify hydric soils</td>
<td>0 (0%)</td>
<td>0 (0%)</td>
<td>4 (14%)</td>
<td>14 (48%)</td>
<td>11 (38%)</td>
<td>4.00</td>
<td>.68</td>
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<tr>
<td>The different federal laws and regulations related to wetlands</td>
<td>0 (0%)</td>
<td>2 (7%)</td>
<td>13 (45%)</td>
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<tr>
<td>Identifying key potential</td>
<td>0 (0%)</td>
<td>0 (0%)</td>
<td>4 (14%)</td>
<td>12 (40%)</td>
<td>13 (40%)</td>
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Identifying key potential wetland vegetation indicators

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Using the Field Guide to identify wetland plants

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</table>

Participants liked the hands-on approach and the opportunity to interact with knowledgeable instructors the most from the field day. Most of the participants expressed satisfaction with the relevance of information to their needs, teaching strategies, field training facilities, presentation quality and subject matter knowledge of the instructors, and with the overall quality of the field training.

Some areas for improvement were identified from the surveys, focus group interviews and evaluator’s observation. They included aspects like explicitly stating learning objectives at the beginning of the field training, making some changes to the field guide, clearly discussing the learning expectations related to wetlands laws and regulations, adding more time into the field day and having some discussion on how to talk with clients.

The project team considered all of the suggestions for improvement and many modifications were made to all aspects of the training. A few examples include reviewing all images in the field guide, developing new material in response to commonly observed points of confusion, and reshaping language throughout the course to reinforce information that students were missing.

**Implications and Recommendations**

The planning and methods used for this pilot field day evaluation have implications for project directors, extension educators and evaluators charged with evaluating their programs. Collecting data from surveys, focus groups and participant-observation allowed for triangulation which enhances data validity. This strengthened the team’s understanding of how the pilot training could be improved before rolling it out to around 750 federal agency employees. Also, involving the project team in developing data collection instruments and evaluator’s involvement throughout the project planning phase ensured the evaluation was focused and collecting data that could accurately measure the anticipated outcomes.

Project directors and extension educators may consider budgeting evaluation sufficiently so evaluators can attend all important project and stakeholder meetings and design comprehensive evaluations. Evaluators may consider having some kind of a formative evaluation component in their project evaluations as it greatly enhances the possibility of a program to achieve its anticipated outcomes and impacts.

**References**


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Integrating Gender and Nutrition into Agricultural Extension Systems. An International Perspective

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Keywords: gender, nutrition, agricultural extension, international

Introduction / Theoretical Framework / Review of the Literature
Globally, women make up approximately 43 percent of the agricultural labor force and typically - having both field and household duties - they carry a heavier burden than men. In particular, women are often primarily responsible for weeding, harvest, food preparation, child-rearing, collecting fuel and water, etc. (Sofa Team and Doss, 2011). Despite these extensive roles, most developing country extension systems (where we consider extension to consist of public, private and non-profit organizations) do not sufficiently address the needs of female farmers or rural workers. Further, while advances have been made in many areas of development, 70% of the world’s poor live in rural areas where nutritional problems such as wasting and Vitamin A deficiency remain very high.

Purpose and Objectives.
Recognizing the need, interest and opportunity for extension services to change, USAID is supporting the global –Integrating Gender and Nutrition in Agricultural Extension Systems (INGENAES) project - to bring together experts from the Gender, Health and Nutrition and Ag Extension fields. With a focus on “what works for extension field staff”, the project is designed to assist partners in Feed the Future countries build more robust, gender-responsive, and nutrition-sensitive Extension Advisory Services capable of assessing and responding to the needs of both men and women farmers. Led by the University of Illinois Urbana Champaign (UIUC), the consortium (UIUC, University of California Davis, University of Florida and Cultural Practice) works with partners in Bangladesh, Zambia, Nepal, Honduras, Malawi, Sierra Leone, Uganda, and Tajikistan.


Theoretical/Philosophical Themes

Recognizing the many challenges that country extension systems face, one intent of INGENAES is to identify elements of gender inclusiveness and nutrition that agricultural extension systems and field staff can easily embrace. While there are some situations where Ag extension and development staff might be trained to have considerable depth in both topics, the reality is that more generally, a set of simple activities, tools or knowledge (compatible with their existing activities) are likely to result in wider application and change.

Results, Products, and/or Conclusions

In the project, there remains a positive tension between the Gender, Nutrition and Ag Extension groups as to what would constitute an acceptable set of key information and skills. It quickly emerged that the key driver for information needs was the circumstances of the field extension workers and what they could reasonably implement given their (typically) already heavy schedules, their relatively low level of support and the level of training they receive on gender empowerment and nutrition.

One interesting divergence within the group related to “What is considered an acceptable ‘message’ to convey”. Gender empowerment tends to focus on people, their roles and giving them voice in their daily activities (a process), nutrition tends to have a carefully crafted (and very targeted) message developed to result in specific behavior changes, while Ag extension is often trying to present people with a range of options that fit the farmers’ circumstances (natural and financial resources, markets, etc.).

A number of differences in approaches across sectors led the project to distill simple guidelines for implementation. For example, in a recent National Extension workshop in Zambia, the group indicated the desire to define their target audience as the farm household – rather than the farmer per se. Such a simple change immediately broadened their target group for greater gender inclusion. Also, relatively simple Nutrition messages were identified (Kuyper et al., 2015) including 1) Encouraging people to eat a variety of foods every day, 2) Helping families grow and/or buy a variety of foods to eat, 3) Teaching farm families to store and prepare food so that it stays nutritious longer (and spoils less), 4) Encouraging good cleanliness practices (e.g. handwashing after work in fields), and 5) Helping farmers plan to avoid “hungry” periods. These messages fit quite well with what most extension workers are able to and can communicate.

The project is distilling a series of simple “best practices” and resources (e.g., Fact and Activity sheets, the Institutional Review and Planning Framework, a Competency Framework, etc.) for enhancing Gender empowerment and Nutrition within Ag Extension.

Recommendations, Educational Importance, Implications, and/or Application

- Seek institutional buy-in for a commitment to gender inclusion and nutrition. (It is important to show how such commitments fit with current institutional mandates.)
- Realistically identify the potential actions and the support materials required for field-level extension staff in developing countries to be active in these areas. Identify where gender and nutrition actions fit with existing activities and knowledge (rather than trying to add multi layers of new knowledge and activity.)
- Through the appropriate role(s) and messages for Ag Extension advisors, seek to complement not replace the role of the nutrition/health or the gender experts.
References
Long Term Effect of a Study Abroad/Service Learning Program: A Qualitative Inquiry

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Keywords: service learning, study abroad, community-based ecotourism

Introduction
This study builds upon previous research of the Community-Based Ecotourism in Yucatán study abroad classes between 2005 and 2013. The program included lectures, discussion, reading assignments, and visits to historic, natural and eco-tourism venues throughout the state of Yucatán, Mexico. A service-learning project was included where students worked with rural Maya communities to design low impact tourism projects. Analysis of the students’ pre- and post-reflective journals confirmed the same benefits realized in other studies of the phenomenon; Greater cultural understanding, personal and academic growth, and an overall sense of gratitude for their own, personal situations.

Theoretical Framework
The theoretical framework for this study is experiential education. There must be an “organic connection” between educational material and what the learner has already experienced in order to avoid making the curriculum “formal and symbolic” (Dewey, 1902). Dewey felt that any learning, or the accumulation of knowledge, was a function of one’s own experiences within a context or social setting.

Review of Literature
The literature has shown that benefits of study abroad have a lasting impact on students who participated in both short-term and long-term programs (Dwyer & Peters, 2004; Klein & Lawver, 2007; Lewis & Niesenbaum, 2005). However long-term experiences such as an entire semester or school year produced even greater benefits (Dwyer & Peters, 2004; Thomlison, 1991). Even though the trend is for shorter-term programs recent studies have shown that including a service-learning component can greatly enhance benefits to students and reflect those found in longer term programs (Lewis & Niesenbaum, 2005; Anderson, Lawton, Rexeisen, & Hubbard, 2006; Klein & Lawver, 2007). Consequently, many disciplines have incorporated service-learning into their study abroad programs (Myers, Hill, & Harwood, 2005; Smith-Pariola & Goke-Pariola, 2006). Little research has been conducted to determine the lasting impact of the combined study abroad/service-learning phenomenon.
**Purpose of the Study**

The purpose of this study was to determine the long-term impact of a service-learning/study abroad program on personal and professional lives of student participants several years after graduation. It is a part of a larger, long-term phenomenological study using qualitative measures to analyze interview transcripts of the earliest participants in the Community-Based Ecotourism in Yucatán program.

**Methodology**

Methodologies included quantitative instruments, qualitative techniques, or mixed methodologies. The data for this study were interview transcripts from participants in the earliest program in 2005. The selection of the participants was a purposeful sampling, typical of most qualitative and phenomenological studies (Creswell, 1998; Gall, Gall, & Borg, 2007).

Six interviews were conducted using a semi structured approach. An interview guide was followed that allowed for the discovery of information to emerge from the discussion (Goodall, 2008). Analysis of the interview transcripts was conducted using NVivo software by first creating two nodes. The Current Context node identified those statements that referenced their current personal or profession lives after graduation while the Reflective Context node referenced recollections from the 2005 program. Sub-nodes were then created that reflected the benefits from earlier studies; Cultural Observations, Personal Growth, and Academic/Professional Issues. Analysis of the interview transcripts revealed that reflections on Landscape Observations and Community Interaction were significant enough to warrant the creation of two additional sub-nodes.

The analysis of the transcripts adapted the process used by many landscape architects that places a relative value of “Primary,” “Secondary,” or “Tertiary” (McHarg, 1969) to identify the importance placed on a node by the former students.

**Results and Discussion**

As illustrated in Table 1, in the current context, the least dominant themes dealt with the sub-nodes of cultural observations and personal growth. Academic and professional Issues were of primary importance in the current context and involved career changes, disenchantment, and the poor economy following graduation. It is noteworthy however, that participants still see those values as important.

<table>
<thead>
<tr>
<th>Sub-node Context</th>
<th>Current Context</th>
<th>Reflective Context</th>
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<tbody>
<tr>
<td>Cultural Observations</td>
<td>Tertiary</td>
<td>Secondary</td>
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<tr>
<td>Personal Growth</td>
<td>Tertiary</td>
<td>Tertiary</td>
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<tr>
<td>Academic/Prof. Issues</td>
<td>Primary</td>
<td>Primary</td>
</tr>
<tr>
<td>Landscape Observations</td>
<td>N/A</td>
<td>Secondary</td>
</tr>
<tr>
<td>Community Interaction</td>
<td>N/A</td>
<td>Primary</td>
</tr>
</tbody>
</table>

In the reflective context, the sub-nodes of cultural issues and landscape observations were somewhat more important. Many recalled cultural interaction and observations which indicated that the theme is still memorable and of value to them. Similarly, remembering the layout of...
places that were visited, the landscape features, and the relationships is what might be expected from individuals trained understand the land. When reviewing interview transcripts, it became obvious that close, intimate interaction with communities had the most significant, long-term impact. When asked about their most vivid memory, many provided responses similar to the following:

Yaxachen, that whole village experience where we played with the kids, oh gosh, any other day I could remember those kids’ names. I still have the picture. Where [another student] and I, remember we played that game, it was like baseball and golf and kickball all put into one and we played with them. And then we played basketball a couple of nights with the local guys. Remember that? I think that whole village experience is where we got to go and make tortillas with the wives of the villagers.

What became clear was that community interaction was a very important aspect of the service-learning projects. During the interviews, a discussion about the project would often drift into a discussion about the community. Consequently, the importance of the community interaction along with the curriculum and the service-learning project, was the primary outcome of the Yucatán program. What was significant is the lasting effect on the participants’ attitudes and behaviors regarding the concept of civic engagement that is the foundation of the service-learning pedagogy.

Recommendations & Implications

The implication from this study is that a study abroad/service-learning program can have a lasting and meaningful effect, by including activities with the client community beyond the project itself. By doing this, the Yucatan program’s outcomes could easily be replicated in another cultural context. However, it is recommended that there be a healthy balance of curriculum, project, and cultural activities. In that way the principles of service-learning and the advantages of study abroad will become mutually beneficial and long-lasting.

References


Media Coverage of the 2000 - 2004 Coffee Prices Crash

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Keywords:  International Agricultural Issues, Attitudes, Beliefs, Undergraduate Education

Introduction

Coffee shops are easily find in almost every city and corner in the world, but not every city in the world produces coffee. This is one of the greatest examples of how agricultural systems have globalized and become part of everyone’s life worldwide.

Over the years, the coffee industry has experienced important challenges, but none compares to the price crisis in the early 2000s. Vietnam and Brazil produced huge crops of coffee beans and flooded the market, which plummeted the price (Freetrade Foundation, 2012). The International Coffee Organization (ICO) highlighted that the price crisis had devastating economic, social, and environmental implications worldwide (ICO, 2004). In Central America, coffee plays an important role to national economies and for rural households. Therefore, this decline significantly impacted each country’s economy in the region, putting more pressure in an already depressed economy (Varangis, 2003). Prices dropped below production costs and widespread malnutrition, unemployment, and migration rose (Freetrade Foundation, 2012). The ICO recommended a series of actions to minimize these challenges and reduce vulnerability, including governmental and donor funding to promote crop diversification to minimized farmers’ dependency on coffee production by incorporating a secondary crop (Osorio, 2002). In contrast, consumer and importing countries maintained a steady market and was considered relatively healthy (ICO, 2009).

Varangis (2003) suggested extension services could serve as focal point to provide research and technical assistance to farmers. Yet, these were characterized as underfunded and understaff. These challenges remain. ICO recommendations in the recent coffee rust outbreak were similar to the ones provided in the early 2000s (ICO, 2013). Therefore, studying media coverage of historical events can help shape policies and efforts to overcome present and future challenges (Van Belle, 2000) reducing negative impacts to national economies and individuals.

This study is based on framing theory. Framing refers to how stories are developed and provide the audience a conceptualization of an issue from a particular perspective (Chong & Druckman, 2007). Scheufele (1999) indicates that media frames may be influenced by intrinsic or extrinsic factors. In this study, ICO recommendations regarding the supply and demand of the
value chain (Osorio, 2002) represent an extrinsic factor that may have potentially influenced how the media framed the coffee crisis.

**Purpose and Objectives**

The purpose of this study was to explore how media framed the coverage of the coffee price crisis. The following research objectives guided this study:

1. Determine the media frames used by newspapers worldwide to cover the coffee price crisis in Central America from September 1999 to December 2004.
2. Determine the use of the ICO recommendations in media coverage of the crisis.

**Methodology**

The research objectives were addressed through content analysis. News articles published from September 1999 to December 2004 were analyzed. Prices started to decline at the beginning of the coffee production cycle in 1999, and prices began to rebound near the end of 2004. News articles were collected through a Lexis-Nexis search using the keywords *coffee crisis* and *Central America*. In total, 18 news articles met the established criteria.

Following the procedures used by An and Grower (2009), the researchers identified the predominant frame on the news article, based on the research conducted by Neuman, Just, and Crigler (1992): conflict, economic, consequences, human impact, and morality. In order to identify and confirm the frame used by media, the researchers followed a coding book used by Semetko and Walkenburg (2000). Coders answered 20 questions per news article to identify the frame used by media. “A high [summation] on the scale of the particular news frame indicated that the news coverage had a high degree of the particular frame” (An & Gower, 2009, p.109). Five questions were added to identify the presence of an ICO recommendation in the articles. Coders answered *yes* (1) or *no* (0) to each question in order to confirm the frame used by media. Inter-coder reliability was conducted using Cohen’s Kappa. Results varied from $\kappa = 0.45$ to $\kappa = 1.00$ [CI 95%], $p < 0.05$. These indicate that coders were in moderate to perfect agreement based on the suggestions by Landis and Koch (1977). Coders discussed items in disagreement until reaching the agreement point. The researchers used descriptive statistics to analyze results.

**Results**

Results indicate that overall, the most common frame used during the coffee price crisis among the studied articles was conflict (95.1%), followed by attribution of responsibility (88.9%), economic (88.9%), human interest (83.4%), and morality (16.7%). While three of the recommendations by ICO were used in the media coverage, diversification (38.9%) and barriers to trade (38.9%), followed by quality improvement (33.3%); the remaining recommendations of the ICO were not used in the media coverage.

**Recommendations - Implications**

The media coverage during the coffee price crisis of Central America internationally was heavily marked by the conflict, attribution of responsibility, economic, and human interest frames. These reflect, as was suggested by ICO (2004), the multiple implications for producing countries surrounding the coffee price crisis – economic, social, and environmental. In addition, these results coincide with previous researchers’ suggestions regarding media coverage during a crisis: a high emphasis on attributing responsibility, the likelihood of providing a human face to provoke emotions, and the potential economic effects (An & Grower, 2009). However it is
important to highlight the reduced use of ICO recommendations by media. This may be a result of the limited diffusion of information to media by the organization.

In future research, it is important to investigate other potential extrinsic factors that may have influenced a coverage of the crisis. Additionally, it is recommended to explore the intrinsic factors that may have inclined the news frame, such as journalists’ perspective and beliefs. The combination of evaluating extrinsic and extrinsic factors to frame news articles, along with the audience preconceived level of importance of an issue, may potentially provide insight to predict frames used by media in future crisis. This can potentially provide a head start to the Central American agricultural industry on future crisis management.

References


Post-fellowship Experiences of African Entrepreneurs: Interpreting Impact a Year Later

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**Keywords:** entrepreneurship; human capital; professional development; Sub-Saharan Africa

**Introduction/Need for Research**
In 2015, the United Nations (UN) presented the Sustainable Development Goals (SDGs). To assess global poverty at the launch of these goals, the UN developed the *2015 Human Development Report: Work for Human Development*. This report provided a metric to evaluate “long-term progress in three basic dimensions of human development: a long and healthy life, access to knowledge and a decent standard of living” (United Nations Development Programme, 2015a, p. 3) in the form of the Human Development Index (HDI). Sub-Saharan Africa (SSA) exhibited some of the lowest HDI scores. Kenya and Uganda were classified as low human development countries (United Nations Development Programme, 2015b, 2015c). South Africa was categorized as a medium human development nation (United Nations Development Programme, 2015d).

Throughout the developing world, micro, small, and medium size enterprises (MSMEs) are integral parts of the economy. In 2012, MSMEs accounted for up to 90% of businesses and 50% of employment worldwide (International Finance Corporation, n.d.). “Training, or capacity building, is just as important as infrastructure. Appropriate levels of higher and technical education allow entrepreneurs to use existing technologies in new ways to address local problems” (Juma, 2011, p. 11). To bolster the human capital of entrepreneurs in SSA, the U.S. Department of State funded a grant proposed by faculty members of Oklahoma State University. The project brought Entrepreneur Fellows (EFs) to the United States for a five-week professional development program or fellowship. Twenty-three individuals from Kenya, South Africa, and Uganda participated; most had agricultural or related rural development ventures. During their stay in the United States in 2014, the EFs took part in entrepreneurial training, short-term internships/job shadowing placements, including mentoring, and cultural experiences.
Conceptual/Theoretical Lens

The conceptual framework underpinning this study is human capital theory (HCT). According to Salamon (1991), “human capital refers to the acquired skills, knowledge, and abilities of human beings” (p. 3). The study’s theoretical framework was derived from Ajzen’s (1991) theory of planned behavior. The training program was considered a behavioral intervention. According to Ajzen (1991), interventions have the potential to change the beliefs of individuals, which can affect their intentions and ultimately actions; in this case, behaviors related to entrepreneurship.

Purpose/Objective

The purpose of this qualitative research study was to explore the experiences of select EFs in regard to their business and social venturing enterprises approximately one year after participation in an entrepreneurship development program. Therefore, this inquiry sought to identify themes expressed by the selected entrepreneurs about how participation in the fellowship program impacted their work after returning home.

Methods/Data Sources

Of the 23 EFs, 11 were purposefully selected for interviews based on gender, country of origin, type of enterprise, and relationship to a marginalized group, e.g., youth and the hearing impaired. More than one year had elapsed since their fellowship experiences in the United States. This study analyzed multiple cases by which each participant was viewed as an individual unit of analysis to assess “real cases in real situations” (Stake, 2006, p. 3), i.e., participants in the fellowship were all entrepreneurs in developing regions of SSA. The interviews were conducted using Skype, lasted 45 to 60 minutes, and transcribed by the lead researcher. Thereafter, the transcripts were sent to the participants to enable member-checking (Bloomberg & Volpe, 2012; Lincoln & Guba, 1985). The 11 interviews were analyzed and coded to develop themes based on significant statements made by the EFs (Saldaña, 2016). According to Saldaña (2016), “summative, salient, essence-capturing . . .” (p. 4) words or phrases can be categorized to derive themes.

Selected Results/Conclusions

Analysis of the interview transcripts revealed three overarching themes: interpersonal connections, the entrepreneurial spirit, and impact of the fellowship. Within these overarching themes are nine subthemes: community engagement; importance of relationships; networking and communication; accessing capital; growth and goal-oriented; seeking and sharing information; OSU as a measure of success; new global network; and creation of a youth development organization. In regard to community engagement, most participants gave voice to the importance of smallholder farmers and youth development in their interviews. A Kenyan EF remarked: “We are thinking of how to be able to reach most of the youth who are currently jobless. . . . Why can’t we give back especially to the youth who have lost direction?” The fellowship included exposure to the U.S. approach to secondary agricultural education and youth development through 4-H. The network of EFs formed through the program resulted in their founding a new organization for the development of youth in and for the agriculture sectors of the respective countries. i.e., the Global Partnership for African Youth in Agriculture.

Another theme which emerged was the importance of relationships. In conjunction with family and communal relationships, participants indicated professional networks were integral to
the development of their enterprises. One such network formed between the EFs and U.S. business owners and educators with the latter serving as mentors to the African Fellows. A South African Fellow stated: “Now I have this amazing group of people . . . in the continent of Africa and outside Africa . . . people that I can always share ideas with. The support has just been amazing.” The shared fellowship experience created relational bonds between participants – African and American – that provide a sounding board for new ideas and a mutual, ongoing support system.

**Recommendations/Implications/Educational Importance**

The program forged meaningful personal and business relationships between participants from SSA and the United States and stimulated creation of a new youth development program in the Fellows’ countries. We recommend further research on the long-term impacts of the fellowship. Understanding long-term effects on the participants, their enterprises, and their communities can be valuable when proposing future programs and orchestrating similar professional development experiences. Further, the study’s findings may serve as the basis of cases for study by practitioners of international agricultural development, including agricultural and extension educators, especially in regard to developing resilient entrepreneurs for the agriculture sector.

**References**


Preparing for the 2050 Challenge in Malawi and the United States: Are We Teaching Students about Global Food Security?

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Keywords: global food security, students, 2050 challenge, teaching, agricultural education

Introduction and Conceptual Framework

Over a billion people will be without food by 2050 (USAID, 2009). According to the Food and Agriculture Organization (FAO) of the United Nations (2008), “food security exists when all people, at all times, have physical and economic access to sufficient safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life” (p. 1). The four dimensions of food security are physical availability of food, economic and physical access to food, food utilization, and the stability of the other dimensions over time (FAO, 2008). Food availability addresses the “supply side” of food security and is determined by the level of food production, stock levels and net trade. Economic and physical access to food is concerned about insufficient food access have resulted in a greater policy focus on incomes, expenditure, markets and prices in achieving food security objectives. Food utilization is commonly understood as the way the body makes the most of various nutrients in the food. Food instability is the adverse weather conditions, political instability, or economic factors (unemployment, rising food prices) may have an impact on your food security status (FAO, 2008).

Extension personnel need perpetual training in food security issues to better assist farmers’ understanding of the local and global issue (Roberts, Ganpat, Narine, Heinert, & Rodriguez, 2015). Assisting extension officers better diffuse agricultural knowledge would likely lead to improved yields and enhance food security (McCole, Culbertson, Suvedi, & McNamara, 2014). Though extension personnel have been identified in our association’s literature, little exists as to inquiries related to students’ understanding of food security.

Purpose and Objectives

This study was a part of a larger study seeking to understand students’ knowledge of global food security through enrollment in agricultural courses at the University of Malawi and a Texas A&M University. More specifically, this study sought to:
1. Describe students’ understanding of what food security means;
2. Describe students’ understanding of the four dimensions of food security (availability, access, utilization, and stability) and;
3. Describe the differences between Malawian and Texas A&M students’ understanding of global food security issues.

Methodology

Two hundred three students ($N = 203$) from the University of Malawi and two hundred fifteen ($N = 215$) students from Texas A&M University in the U.S. studying agriculture were the population. One hundred eighty-eight Malawian students responded; yielding a 92.61% response
rate. One hundred eighty-one U.S. students responded producing a response rate of 84.18%.

The survey instrument included three sections: personal characteristics questions, students’ perceptions of food security’s meaning, and students’ perceptions regarding each of the food security dimensions. The anchors in the instrument represented by: 4 = strongly agree, 3 = agree, 2 = disagree, and 1 = strongly disagree. The instrument was examined for content validity by a panel of food security experts and revised per recommendations. The reliability coefficients for availability were .92, access.95, utilization .90, and stability.93. Descriptive statistics using means and standard deviations were used to describe the study population, and t-tests were implemented to investigate the differences between Malawian and Texas A&M students’ understanding of global food security issues.

**Findings and Conclusions**

Both Malawian ($M = 3.16, SD = .44$) and U.S. ($M = 3.39, SD = .37$) students agreed to the definition of food security has identified by the FAO (2008). However, there were differences in students’ understanding of availability and access. Malawian students were less agreeable than Texas A&M students regarding the definition of availability ($M = 2.43, SD = .54$) to ($M = 2.81, SD = .41$). Malawian students were less agreeable with the meaning of access as compared to Texas A&M students ($M = 2.54, SD = .31$) to ($M = 2.89, SD = .39$).

In regards to utilization, both Malawian and Texas A&M students indicated similar levels of understanding the dimension. Malawian students reported scores of ($M = 2.86, SD = .31$) compared to U.S. students ($M = 2.89, SD = .33$).

All respondents indicated a lack of understanding in regards to FAO’s (2008) stability dimension. Malawian students reported ($M = 1.88, SD = .32$) for the construct and Texas A&M indicated a score of ($M = 1.93, SD = .39$). This could be due to stability as the external factors that affect food security and undergraduate students may not be fully aware of those given their experience.

There was a significant difference in respondents’ understanding of availability. There was a significant difference for the availability dimension by country, $t (179) = 2.59, p < .05$, with Texas A&M students having significantly higher means than Malawian. The effect size was moderate ($d = .54$). There was a significant difference for access, $t (179) = 2.71, p < .05$, with Texas A&M ($M = 2.89, SD = .39$) receiving higher means than Malawian ($M = 2.54, SD = .31$) for access. The effect size was moderate ($d = .52$).

**Recommendations, Educational Importance, Implications, and Application**

Curricula in colleges of agriculture should be examined for the inclusion of food security content regardless of context. Future studies should examine instructor’s knowledge of global food security issues. We cannot make the assumption that faculty in colleges of agriculture understand global food security and issues that arise from the phenomena. New faculty in colleges of agriculture may need professional development in global food security issues and methods to teach that content to students in their respective classes. The inclusion of perpetual lessons that educate students as to the definition, dimensions, and impact of global food security issues are the primary approach to enhance student learning and offer future solutions that address this global challenge.

Training would enhance new and experienced extension personnel’s understanding of how global food security impacts food production and consumption locally. If food security trainings are not available locally for extension officers, some institutions offer a food security
certificate online at little to no cost. Face-to-face food security trainings could be offered by the Ministry of Agriculture, faculty at local institutions, coordinators of NGO’s, personnel of pluralistic extension systems, and producers involved in farmer-driven Extension systems around the world.

References
Reversing Food Insecurity in Southwestern Kenya: Evidence-based Strategy to Enhance Women Farmers’ Postharvest Handling of Horticulture Crops

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Keywords: Food security, women, postharvest, horticulture

Introduction
Southwestern Kenya smallholder horticultural farmers incur high postharvest losses. A report entitled *From Farm to Market* notes that the bulk of horticulture growers suffer 40 percent loss during production compounded with nationally losing close to 50 million shillings per year due to poor logistics between farm and collection points for markets (Waitathu, 2014). Kander (2005) states reversing postharvest losses in developing countries can be approached from two perspectives: “1) understanding the biological and environmental factors involved in postharvest deterioration and 2) use the appropriate postharvest technology procedures that will slow down deterioration and maintain quality and safety of the commodities (2169).” Furthermore, forty years of field observations document that 40 to 50% of horticultural crops produced are lost before being consumed, mainly due to high rates of bruising, water loss and subsequent decay during postharvest handling (Kitinoja, 2002; Ray and Ravi, 2005). Mrema and Rolle (cited in Kader, 2005) promote a holistic approach addressing postharvest losses by linking on-farm...
activities to processing, marketing and distribution. Food insecurity results from poor marketing systems, weak research and development capacity and inadequate policies, infrastructure and information exchange. Further, farmers are exploited by middlemen who buy farmers’ horticultural produce at low prices and sell at high prices, making horticulture farming unattractive.

Southwestern Kenya was declared a food insecure zone with inadequate knowledge and skills on improved postharvest technologies and lack of adoption of new technologies. Horticultural produce losses strategically addressed through community partnerships could contribute to improved food security and reduced poverty levels in the region. There is therefore need to identify sources and causes of losses, identify appropriate and cost effective postharvest technologies, and further, strategies need to be developed to link farmers to structured markets to improve income among smallholder farmers.

**Purpose and Objectives**

The purpose of this project is to improve household food security for smallholder horticulture women farmers in southwestern Kenya through application of appropriate and cost effective postharvest handling and technologies. For this project, food security includes enhanced access to quality horticulture crops for household use or higher quality produce reaching a market to augment household incomes for smallholder farmers. Phase I of the project presents initial findings with the following specific objectives:

1. Present major causes and postharvest losses in horticultural crops identified in a baseline survey experienced by smallholder women farmers in Kisii and Nyamira counties.
2. Describe the household dynamics of use and ultimate distribution of horticulture crops.
3. Present initial findings on adoption of postharvest handling techniques recommended based on the baseline data survey.

**Method**

A team of practitioners from University of Minnesota Extension and Kisii University developed a draft baseline survey on cultivation practices in the region. Kenyan extension staff reviewed the draft survey to expand and clarify data fields. The instrument was field tested with 18 women at one sub-location within the target counties for appropriateness of language, general formatting of the questionnaire and understanding by farmers with an assessment of the responses compared to the expected information. The questionnaire, developed in English, was interpreted into Ekegussi or Kiswahili by native speakers depending on the farmers’ preference. The survey was revised based on the field test.

Farmers were selected in consultation with chiefs of the sub-locations. Selection criteria for a farmer were she had access to land for cultivation and she makes the decision on selection and management of crops on the land. Interviews were conducted in 10 sub-locations in Kisii and Nyamira counties. Twenty farmers in each sub-location were interviewed during June and July of 2016. Data was analyzed using descriptive statistics functions in Excel spreadsheets.

**Results**

The project is organized around the two rainy seasons in Kenya. Interventions occur prior to the rain, mid-season with management practices and near harvest time with postharvest handling practices. Workshops using community-based demonstration sites are the mechanism for field-based improvements in management practices.
The population for this study is 200 women farmers primarily between 25 and 54 years of age. The majority (87.5%) are married. The women grow seven leafy vegetable crops and four fruit crops: bananas (97%), avocados (90.5%), pumpkins (78.5%) and tomatoes (15.0%). Women distribute produce within the household; 59.4% share with family members living in other communities (spouses working in cities, children in residential schools, extended family members); and 75.9% sell in the markets for cash. A farmer selling produce at markets during the dry season receives an average of 197.2% higher price for her produce depending on the crop.

Baseline survey data indicate major issues to be addressed. Leafy vegetable crops are primarily eaten fresh; on average only 26.1% of the crops are processed or packaged. Field losses result from insects and disease damage. Postharvest losses are attributed to packaging, carrying the leafy crops to market (damaged leaves lowering the quality), displaying produce in full sun resulting in withering, and seasonal over-harvesting of leaves with too much available in the market reducing prices. Access to solar dryers for produce is limited and no selection of quality material for drying and selling occurs.

**Educational Importance**

The results of Phase I are important for several reasons. The baseline survey is the first field-based analysis of horticulture production, losses and postharvest practices within Kisii and Nyamira counties. Using this baseline survey, the university partnership has an evidence-based foundation for best practices and effective measures to increase household food security. Phase I documents the farmers’ contribution to household food security not just in the locale but also to extended family members working in cities through measuring the horticulture production sent elsewhere to family members. This process is an example for extension staff to gain a grounded understanding of the challenges faced by women farmers, a proximate estimate of postharvest losses and contributions to household income through produce sold at market. This guides development of the extension program during the subsequent rainy seasons working with the farmers, their application and potential adaptation of postharvest handling and technologies recommendations.

**References**


Rural Development within Public/Private Advisory Organizations: A Case Study of New Entrant Small Scale-Farmers in Blueberry Production

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Keywords: advisory services, rural development, cooperation

Introduction
The case study was selected from a production area that is growing in importance and is related with governmental concerns to increase agricultural exports. The blueberry production system was selected for its dynamic promotion by public and private organizations, while engaging new small-scale farmers. The new entrant small-scale farmers are assisted by an advisory system that is a mix of private and public institutions that provide advice and services about orchard production and rural development programmes (Baptista et al. 2014). This interconnected system cooperates through a bottom-up concern to increase economic and social opportunities during the Portuguese economic crisis. The private-public mix promoted the entry of farmers into the blueberry production area through European rural development programmes.

Purpose
The major research objective was to investigate the performance of advisory services and additional organizations with regard to new entrant small-scale farmers and part-time farmers. Additional research questions were:
1. What types of methods addressed the specificities and needs of small farmers?
2. How do small-scale farmers resort to ICT as a tool to acquire knowledge and information?

Methods and or Data Sources
The overall research methods and data collection process can be identified as a qualitative case study design (Cresswell, 1994 and Isaac & Michael, 1981). First, the research design was initiated through a literature review. This review permitted an introductory analysis and characterization of the blueberry sector. These preliminary steps assisted in selecting the region of study and identifying the key stakeholders within the agricultural development system, concentrating on the advisory services. The total number of valid interviews with new small-scale farmers was 25. The study
operationally defined the small-scale blueberry farmers through diverse economic criteria:
- Blueberry small fruit production;
- Less than 1,5 hectares in agricultural production;
- Earning less than 25.000 Euros/year from agricultural production;
- Farm installation from 2007/2008 in blueberry production with at least one harvest.

The study also completed six interviews with blueberry production and marketing advisors/technicians (Madureira et al., 2014).

**Results, Products and/or Conclusions**

The new entrants had prior employment in other sectors, but economic crisis assisted in the decision to invest in family lands through blueberry production for an additional source of income. The farmer profile in this group was a high level of education (undergraduate degrees not in agricultural sciences), average age of 40 and predominately male.

In the analysis and interpretation of results the study identified the means and methods for the new small-scale entrants to access knowledge and strengthen their capacities to produce and maintain blueberry orchards in Portugal. The group had little or no experience in growing blueberries or marketing a quality product in the international market. The interviews assisted the research team to explain and describe bottom-up cooperation issues with both the private and public entities, the farmer advisory system, advisory educational methods and the governmental preoccupation to increase agricultural exports during the crisis.

The interviews confirmed that the small-scale farmers are assisted by a farmer advisory system that is a mix of private and public institutions from the contiguous production area supported by the agricultural knowledge and information system (AKIS) (Rivieira, Qamar & Mwandemere 2005). This inter-connected system resembles a commodity-based extension (UNDP, 1991) or advisory service that is privatised. The private-public AKIS mix is also promoting the entry of farmers into the blueberry production area with the assistance of the Regional Development Programme known by the acronym PRODER 113 (Regidor, 2012). The new entrant farmers were encouraged through a bottom-up process to use consultancy services for the construction of their financial projects for funding, blueberry production certification and the subsidized investments. There were project facilitators that assisted in this process to secure subsidized investments and loans. This was documented as well in the greenhouse flower production in Trás-os-Montes (Koehnen, Caldas & Gerry 1999). However, for some new entrants, there were problems associated to higher cost in establishing the orchard that did not reflect the investment figures and lower estimated returns as a result of a pricing market change in 2014.

The private-public advisory service system has produced written training materials, ICT platforms and established a demonstration field for farmers. These are some diverse tools and methods developed to communicate to farmers along with the on farm visit and farm demonstrations (Lopes da Fonseca & Oliveira, nd). There are also training programs and workshops offered to the small-scale new entrant farmers. The provision of advisory and training services, in the opinion of the small-scale farmers, determined no major inequality among the different economic types of blueberry producers. And yet, 40% felt that small-scale farmers were somewhat disadvantaged when comparing the large-scale producers who engaged independently with the services offered by the agricultural knowledge system.
Recommendations, Educational Importance, Implications, and/or Application

One of the lesson learned is that the advisory services sustainability factor will be challenged in a relatively short time period as world-wide competition and price fluctuations for the blueberry sector become issues in an advisory system dependent upon price or sale of the commodity to finance the system. In 2014, the fruit price diminished and in the interviews the farmers addressed their concerns for payment of the PRODER financial project under these conditions. In addition to the price for their fruit, the small-scale farmers identified other needs such as greater variety testing; resolution of certification issues; managing on-farm storage and fruit preservation; learning more about on-farm sales and safe food processing or transformation of fresh fruit to other saleable products. These concerns are the challenges for both the grower and the AKIS and other governmental and non-governmental entities when considering a community learning process approach (Korten, 1980).

All stakeholders in the cooperative inter-institutional network will need to be more active in engaging with small group learning networks. The non-formal educational services must play a role to construct novel learning networks through ICT tools and traditional methods such as meetings, training actions, orchard visits and workshops.

References


Lopes da Fonseca, L. & Oliveira, P.B. (nd). A Produção de Mirtilos em Portugal. EAN, Departamento de Horticultura e Floricultura. Oeiras


Scoping Study on Professionalization Issues in Extension and Advisory Services

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Keywords: Extension, professionalization, capacity, training, education

Introduction

Extension services are a critical component of the agricultural innovation system, contributing to food security and improved incomes and livelihoods. However, extension services must be professional to perform effectively. The lack of professionalization can lead to the services being under-valued and ignored as a desired career track by young people.

Professionalism is an important aspect of any profession, affecting performance of individuals and organizations and contributing to their value. A profession can be defined as a type of job that requires special education, training, or skills. Professionalization can be defined as the skills, good judgment, and behavior that is expected from a person who is trained in a particular profession. Professionalization not only includes possessing sufficient human capacity, but the appropriate institutionalization of policies, strategies, approaches, and methods, and valorization of these capacity strengthening activities (GFRAS 2015).

Extension thus needs to be recognized and institutionalized as a profession. Professionalization of extension and advisory services can lead to well-functioning and proficient organizations with effective staff, who are responsive to the needs and demands of male and female farmers, as well as youth. Professionalization should contribute to extension services being recognized and valued by the countries where they operate, thus receiving the support that they need and offering a valid career opportunity for young people.

Purpose

In 2016 the Global Forum for Rural Advisory Services (GFRAS) commissioned a scoping study on the status of professionalization of extension services worldwide. The purpose of the study was to provide evidence on the overall global state of the art of professionalization in extension, and thus provide GFRAS with ways to strengthen extension globally. The purpose of the paper is to give information on what professionalization is according to the literature, and to report findings from the global forum’s perspectives and status of professionalization.

Methods

The data for the study were collected in a variety of ways. First a literature review was conducted to see what the global network’s view of professionalization was and how national systems are professionalized (if at all). The data collection and analysis was continuously validated by working closely with the GFRAS secretariat and the regional extension networks. An open-
ended questionnaire was developed and examined by a panel of experts for face and content validity before translation into French and Spanish. The questionnaire was then sent out through the GFRAS regional and country networks to key informants and other experts in English, French, and Spanish. Adequate time and reminders were given for responses. Because they were sent to network coordinators to send out to the network members, actual numbers of those who received are not known. Of personally sent questionnaires, 20 were sent with 15 responses. In total there were 54 respondents from 19 countries. Data were compiled by the researchers and coded for the analysis.

Results
The literature review showed that a profession is characterized by a common body of knowledge; a system for controlling admission; rules of conduct; procedures for discipline; and possession of a public and legal authority (Terblanché and Koch, 2012).

Respondents first stated the five most important characteristics of an extension professional (Figure 1).

Respondents also noted the advantages of professionalization: Improving performance and efficiency (27%); setting high standards and raising the extension profile (22%); establishing an innovation platform and policy platform for desirable change (13%); addressing the needs of clients and achievement of goals (10%); and building relationships and sharing experience for collective decision-making (10%).

![Figure 1. Percentage of respondents’ stated most important characteristics of extension professionals](image)

Respondents also gave their views on essential competencies of registered professionals where extension is already professionalized or in process of professionalization (Figure 2).
According to the literature review, professionalization is usually guided by by-laws or similar guidelines to ensure an effective and efficient professional body. According to the respondents where extension is professionalized or in a process of professionalization, the following elements are important: Code of ethics/code of conduct: 77%; fields of practice: 80%; process of continuous professional development: 77%; standards of practice: 75%; and discipline: 75%.

Regional networks or countries that have professionalized extension services include the European Forum for Farm and Rural Advisory Services, Australia, Ireland, Philippines, South Africa, and the United States.

**Recommendations**

Being a professional is the result of not only technical skills but also having the right attitude and functional skills such as communication, coordination, and leadership. Adherence to a code of conduct is also important. There should also be continuous professional development and discipline.

The authors give the following policy recommendations for national policy-makers and decision-makers in agricultural extension and advisory services and education (see also Davis and Terblanché (2016):

a) Standards and procedures for registration of extension as a profession must be put in place by national governments, with the support of professional bodies (where they exist); otherwise by educational and extension organizations.

b) Educational institutions must ensure that the qualifications in agriculture and in extension are in line with national registration requirements.

c) Education and extension institutions should consider continuing education, and/or a postgraduate degree in extension, for those who have a technical diploma or degree but require further (often functional) competencies in extension.

d) Higher education institutions and other trainers should reskill existing staff with functional and technical competencies to enhance their professionalism.

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![Percentage of respondents’ stated essential competencies of registered extension professionals](image)
e) Employers of agricultural extensionists should make sure that employees can register with relevant agencies.

f) Policy-makers and employers should enhance the attractiveness of the profession through a career path for extension, adequate salaries, incentives and awards, and other types of recognition.

References


Strengthening Extension and Advisory Services in Georgia: Developing Capacity and Partnerships

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Keywords: capacity building, Extension & Advisory Services, Extension methodology, Georgia

Introduction

In 2013, the Ministry of Agriculture (MOA) of Georgia created a new public sector extension and advisory service (EAS) to foster the development of Georgia’s agriculture. The leadership of the MOA was aware that significant efforts in capacity building and policy development at the national, regional, and district levels would be required to reach the desired impact. The Minister of Agriculture requested assistance from USAID which resulted in an Associates Award to the Modernizing Extension and Advisory Services (MEAS) activity already underway in other countries.

Objective

The objective of the SEAS Activity in Georgia was to assist the MOA in initiating an effective public agricultural EAS system that meets the needs of Georgian farmers. To accomplish the objective, the SEAS Activity used a comprehensive approach designed to move the MOA through necessary steps leading to a more sustainable and pluralistic EAS system while capitalizing on the significant resource of the new nationwide public funded network.

Methods

SEAS implemented the 2.5 year project using a flexible, participative approach (Mueller & Smith, 2016). Initially, the target benefactors were the new 250 MOA field staff and the MOA leadership. Train-the-trainer (TtT) methods were used at the outset. A SWOT process identified field staff needs for future project efforts. MOA leaders participated in discovery tours to U.S. land grant universities and USDA research centers, plus attended the Global Forum for Rural Advisory Services (GFRAS) conference in Kyrgyzstan.

An emphasis later was placed on Information and Communications Technology (ICT) for professional development and outreach to farmers. Mass media was used to disseminate SEAS developed instructional videos to large audiences. Internet-based institutional management
software was provided to the MOA. Agronomic and social science research tools to support on-farm demonstrations and survey data collection were taught. A pilot Mentor Program was utilized to foster confidence of district-based EAS employees. Lastly, the SEAS leadership worked intensively at building partnerships with other international donors and their implementers.

**Results/Products**

The most important early activity for SEAS leadership was forming a strong partnership with the middle management of the MOA. The MOA’s ownership of implementation ideas led to capacity building across its organization and the development of extension policy (Mueller & Baramidze, 2016). To address limited understanding of Extension delivery approaches by the new MOA staff, Train-the-Trainee workshops were held across the country on modern extension methods, horticultural production, plant diseases, soil testing, seedling grafting, plus many other topics. SEAS led three study tours to the U.S. for 30 MOA leaders which included participation in two MEAS symposia. These discovery tours provided opportunities for the MOA leaders to observe organizational EAS policies, approaches and successful programs. The discovery tours had a very positive long-term impact for the SEAS project.

In 2014, SEAS organized the first Georgia National Extension Conference. MOA field staff and central administrators were among the more than 150 attendance. In 2016, a National Extension Forum was held with some 400 extension stakeholders convening to discuss policy options to enhance agricultural development through EAS systems.

The SEAS Activity donated an Agricultural Electronic Management System to the MOA to monitor its field activities and capture statistics regarding its impact on farmers. The SEAS team orchestrated the development by the AUG of software used for the professional development and evaluation of MOA field staff.

Georgian agriculture is characterized by many small, subsistence farm operations (FAO, 2012). GeoStat (2016) reported in the 2014 agricultural census there were over 600,000 farmer land holders, and that 43 percent of Georgia’s population was considered rural. Geographic coverage then of large rural audiences is a critical challenge to the MOA. SEAS demonstrated a Mass Media approach by airing six SEAS prepared video lessons on 25 regional television stations.

A major issue for MOA field staff was diagnosing the disease and pest problems faced by their farmers. SEAS developed a comprehensive publication for diagnosing and treating major diseases of vegetable and melons (Baramidze, Kheterele, & Kushad, 2015). The SEAS activity also authored a program planning and delivery methods guidebook for the MOA staff using demand driven concepts (Dozier, Smith, & Mueller, 2016).

In the last project quarter, SEAS focused on training to upgrade the skills of MOA field staff and farmers in the area of greenhouse production. A SEAS staff member trained in Israel worked with MOA field staff and farmers to demonstrate how the efficiency of existing greenhouses could be improved with minimum cost. SEAS partnered with MASHAV, Israel’s Agency for International Development, to present workshops on best practices of greenhouse production.

A hallmark accomplishment of the SEAS Activity was the building of partnerships with national institutions and international donors and their implementers. SEAS facilitated here-to-for nonexistent relationships between the academic institutions and the MOA and its research center experts. One of the key successes of the SEAS Activity was helping the MOA and the
Agricultural University (AUG) develop good working relationships instrumental for the future capacity building of the MOA staff with the Georgian farmers as the ultimate beneficiary.

**Recommendations**

While the focus of the SEAS Activity was on the newly, public-funded EAS system in Georgia, it is recognized there is a need for both public and private EAS networks. Public-Private Partnerships (PPPs) with the flexibility to adjust implementation strategies based on research and pilot studies are important. An EAS system that is farmer-driven, decentralized, and pluralistic has the best chance for long-run effectiveness and sustainability. International development donors and implementers need to communicate and coordinate activities to sustain agriculture sector growth. The beneficiary governments need to be proactive in facilitating this coordination of donor support.

**References**


Strengthening National Extension and Advisory Services Using the Best-Fit Framework

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Keywords: Extension, best-fit framework, assessments, methods

Introduction
Agricultural extension and advisory services (EAS) can be a powerful tool to help smallholders break the cycle of low productivity, vulnerability, and poverty (Anderson, 2008). By providing farmers with knowledge and tools about improved agricultural practices, linking them to new technologies, and providing greater access to finance and market solutions, EAS can be a critical force for change. However, EAS in many countries is weak, out-of-date, and under-resourced (Davis et al., 2010). A tool is needed to support the strengthening of EAS in developing countries, which focuses on all of the critical elements that make up extension systems.

Under a global project focused on providing evidence for what EAS methods work and how they can be improved, the researchers modified an analytical framework to use as a tool to diagnose extension systems. The framework will guide the analyses, ensure a common framework for diverse work in multiple countries, and help select and prioritize what areas of extension to strengthen. Through literature review and discussions with key experts, the researchers came up with a modified “best-fit” framework (Birner et al., 2009).

The project will use the modified “best-fit” approach to guide the research and analysis. Researchers will gather information on each of the framework elements through diagnostics (EAS stakeholder mapping, literature reviews, and in-depth assessments) in 19 countries. The framework will also guide design of on-the-ground engagement in several countries, where there will be action research activities with local extension systems.

Purpose
The best-fit framework will provide researchers and implementers with a conceptual and analytical tool for analyzing and strengthening extension services across a variety of countries; this paper describes how the framework will be used in the project. The project activities described below will provide information and evidence to decision makers on best-fit EAS approaches for the local context.

Methods
The framework was developed using a literature review and discussion among the researchers and a wider group of EAS experts as to how it aligns with the project objectives and can serve as a tool to ensure coherence in all the project countries and activities. It will be used to guide the following five sets of project activities.
First, stakeholder mapping will identify key actors within each country. This will include information as to the role of EAS within the agricultural innovation system. Researchers will use surveys, literature review, and key informant interviews.

Second, desk studies will provide information on the status of EAS and help identify gaps in knowledge and make recommendations for potential interventions. They will be based on literature reviews, key informant interviews, and expert opinion.

Third, in-depth assessments will give contextual information and recommendations for on-the-ground activities. This will involve face-to-face meetings, interviews with key stakeholders, and follow up on issues found in the desk review.

Fourth, using new or existing in-depth assessments, the researchers will hold a meeting with key stakeholders to validate conclusions of previous work and identify areas for intervention.

Finally, engagement will take place in a limited number of countries where project partners and relevant extension stakeholders have agreed what the needs are. Each engagement will target one or more of the critical characteristics of an EAS system, as depicted in the analytical framework. To prioritize engagement areas, certain selection criteria were identified: (a) 1-2 years to see convincing results; (b) measurable; (c) within the project partners’ sphere of influence; (d) focus on the value-add of project partners; and (e) local stakeholder buy-in for sustainability.

Product

The framework for the assessments was developed out of previous work by GFRAS (2014), Davis et al. (2010), and Birner et al. (2009). The analytical framework will guide the overall project and keep it coherent. It will be used to help decide which EAS characteristics are within the project’s manageable interests for engagements, and then to identify “best-fit” solutions for EAS.

The modified project framework (Figure 1) uses the best-fit framework to determine EAS areas to strengthen that are within the project’s manageable interests. The frame conditions (political environment, business environment, civil society/collective/community environment, agroecology, and agricultural innovation systems) are outside the project’s manageable interests. The best-fit framework includes characteristics of EAS and the agricultural innovation system. Modifying the best-fit framework, the project framework includes market engagement, livelihood strategies, and community engagement in the EAS and agricultural innovation system area (the second column) rather than the broader frame conditions (the first column), because the project partners can influence these characteristics.

Extension characteristics that will be used for analysis and are within the project’s manageable interests include: governance structures and policy environment; organizational and management capacities and cultures; methods; market engagement; livelihood strategies; and community engagement, and advisory methods. They also include the system-level performance areas: access, quality, and sustainability. The farm households and ultimate impact of EAS depicted in the last box are outside the project’s manageable interests.

Application

The framework will be useful as a tool or guide for policymakers or project implementers who want to strengthen extension in a given country. It provides a well-researched framework that can guide users to the specific extension characteristics that need to be strengthened. It
provides common ground for comparison across countries on the characteristics; for instance, how governance works in a decentralized, pluralistic extension system versus a centralized, government-dominated system. For the project that developed the framework, it will support the analysis and recommendations of how to improve extension, as well as give insights into specific areas that can improved through pilot activities with in the engagement phase of the project.
Figure 1. The Modified Framework to Analyze and Design Pluralistic Extension Systems. Adapted from “From best practice to best fit: A framework for analyzing agricultural advisory services worldwide,” by Birner et. al., 2009, Journal of Agricultural Extension and Education 15(4): p. 344. Adapted with permission.
References


Strengthening the Capacity of Agricultural Higher Education Institutions: the iAGRI Experience with Sokoine University of Agriculture, Tanzania

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Keywords: agricultural higher education institutions (AHEI), human and institutional capacity development (HICD), long-term degree training, Tanzania

Introduction

Strengthening the capacity of agricultural higher education institutions (AHEI) is important to sustaining and building resilience into national food and agricultural systems in sub-Saharan Africa. Although past university contributions to sustainable agricultural development have been well documented (Montenegro and Patrinos, 2013; World Bank, 2007; Bloom, Canning, and Chan, 2005), several decades of neglect by national governments and donors, have left many of these institutions with burgeoning undergraduate enrollments, overcrowded and deteriorating facilities, depleted faculty numbers, and diminished instructional and research capabilities (Lindow, 2009). More recently, there has been a resurgence of interest among donors to revitalize AHEIs through human and institutional capacity development (HICD), to replenish dwindling human resources and adjust training, research and outreach programs so they can better address changing demographic, food production and consumption trends and emerging market-driven agricultural systems (World Bank, 2007).

In recognition of Tanzania’s high dependence on agriculture for employment, low agricultural productivity and rapidly growing population, the Innovative Agricultural Research Initiative (iAGRI) was developed as a long-term investment in agricultural higher education and research capacity by the Government of Tanzania, the U.S. Agency for International Development under its Feed the Future Initiative and led by a consortium of U.S. Universities. iAGRI’s main goal was to improve food security and agricultural productivity in Tanzania by strengthening the training and collaborative research capacities of Sokoine University of Agriculture (SUA) and the Ministry of Agriculture, Livestock and Fisheries (MALF). The project’s 4 objectives were to: implement a collaborative agriculture research program with SUA
and MALF; provide advanced degree training in agriculture to Tanzanian graduate students; strengthen the capacity of SUA to develop and implement instructional, research and outreach programs in agriculture; and promote cooperation between SUA, U.S. universities, and global south universities.

**Purpose and Objectives**

The purpose of this paper is to document a HICD project by highlighting outputs and innovations, and then lessons learned from implementing the iAGRI project.

**Philosophical Theme**

The iAGRI project was originally designed as a traditional HICD project with an emphasis on degree training and research. The iAGRI project philosophy that emerged was that human capacity development (HCD) while important, if undertaken alone, was insufficient in making strong contributions to institutional capacity development (ICD). Thus, ICD needs to be the goal to which HCD contributes, since it is institutions that build, strengthen and sustain resilient food and agricultural systems.

**Results**

A needs assessment of the Tanzanian food system conducted early in the project identified eight priority areas to guide degree training and collaborative research programs. A merit-based selection process was designed that placed 139 Tanzanians, 71 females and 68 males, in MSc or PhD graduate degree programs in the agricultural sciences, with approximately half studying at U.S. universities and half studying at universities in Africa and India. In addition to funding for coursework and research, students were provided with dual advisors, one from their host university and one from Tanzania, leadership training, and specialized seminars and laboratory opportunities. To date, nearly 80 percent of these students have completed their programs and returned to Tanzania; of these, 92 percent are employed.

Tanzanian agricultural research capacity was enhanced through the completion of ten collaborative research projects by interdisciplinary teams of researchers from SUA, MALF, and U.S. universities. These projects focused on issues crucial for improving food security, including crop improvement, value chain management, climate change, gender and agricultural productivity, water resource management, agricultural policy, and agricultural and nutrition extension. Farmers, extension agents, and students were trained as a result of these research projects and have led to publications and policy-relevant findings and increased adoption of new technologies by small-scale farmers.

To strengthen SUA’s institutional capacity, iAGRI engaged university leaders with internal and external stakeholders in the design and implementation of 23 “organizational experiments” to facilitate organizational leadership and change management. These experiments developed institutional capacities in the areas of leadership, demand-driven services for students and faculty, improvement of administrative processes and practices, and technologies and information for external clients. These experiments resulted in an improvement in support systems and facilities, greater organizational efficiency, improved quality of teaching and research, and changes in mindsets and institutional culture that was more open to change. Through the Innovation Portfolio, iAGRI worked with SUA to strengthen linkages with the private sector by packaging graduate student and faculty research into commercially viable ideas for attracting sponsored-research funding, brokering public-private partnerships between SUA and agribusiness firms, and providing technical assistance to the horticulture industry.
Educational Importance, Lessons Learned, and Implications

Strong and resilient AHEIs provide the foundation necessary to sustain agricultural development in sub-Saharan Africa. iAGRI’s comprehensive approach to ICD has strengthened the capacity of SUA to adjust and respond to demographic and economic challenges, and contribute to sustainable agricultural growth and food security in Tanzania.

HCD, through degree training, has made important contributions to ICD. Degree training has been important to replenishing faculty resources, catalyzing new knowledge generation, and promoting institutional transformation at SUA. The iAGRI degree training model included a merit-based selection process, dual advisors, use of IT for distance research interactions and theses defense, in-country research, advisor travel grants, and awarding half of its degree training scholarships to women.

However, HCD alone is not enough, but must be coupled with ICD to promote long-term institutional transformation. For SUA to thrive and contribute to food security and economic growth in Tanzania, it must have an institutional infrastructure that is robust, engaging, and dynamic in order to attract and retain the best agricultural scientific talent, who can then produce high impact and societally relevant research and high quality training programs for the next generation. In sum, ICD needs to be the goal to which HCD contributes.

Promoting enhanced linkages with the private sector and external stakeholders has been critical to SUA’s capacity development. Through organizational experiments like the Innovation Portfolio, iAGRI has assisted SUA in reaching-out and brokering these relationships. iAGRI’s comprehensive approach to ICD is transforming SUA into a national and regional leader in developing innovative and practical solutions for food security.

References


Students’ Attitudes and Beliefs of International Agricultural Issues

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Introduction
The constant changes taking place in the world require agricultural students to be fully competent and effectively combine their knowledge in their field with skills and attitudes (Hunter, 2004). Study abroad has been widely studied and found as an effective tool for providing students with the necessary tools to become competent in a globalized world (Hendrickson, 2015). However, study abroad can be expensive and inaccessible to students with limited resources (Shaftel, Shaftel, & Ahluwalia, 2007).

Acker and Scanes (2002) recommended multiple ways to internationalize students’ education, including specialized coursework. Recently, Morgan and King (2013) suggested agricultural sciences classes should be continually updated on worldwide events in order to allow students to develop an understanding of global issues in their field of study as international awareness may be an important qualification for student success in their future careers. There is a wide range of opportunities to incorporate international agriculture into the students’ curriculum (Kingery, 2010). For example, virtual experiences in classroom can provide students with international dimension when students have limited financial resources to study abroad (Boyd, Felton, & Dooley, 2004).

Morgan and King (2013) suggested an evaluation of students enrolled in an international dimensions course might provide insight of how students’ global competence changes through education. This study was based on Illeris’s Three Dimensions of Learning Model (2002), which focuses on the subjects learning process through a cognitive, emotional, and society dimension (Merriam, Caffarella, & Baumgartner, 2007).

Purpose and Objectives
The purpose of this study was to evaluate the international agricultural issues attitudes and beliefs of students participating in an international agriculture class. The following research objectives guided this study:

1. Determine changes in students’ attitudes and beliefs toward international agricultural issues after participating in an international agricultural course
2. Evaluate students’ perceptions of international agricultural issues topics discussed in an international agricultural course
Methodology

A total of 13 students enrolled in an international agriculture class participated in this study. A convergent parallel mixed methods design was used. The purpose of this design was to use the strengths of qualitative and quantitative methods to obtain a comprehensive perspective of a phenomenon (Creswell & Clark, 2007).

The quantitative data was collected in a one-group pretest–posttest design at the beginning and at the end of the semester. Students were asked to complete a modified version of the International Agricultural Awareness and Understanding instrument developed by Wingenbach et al. (2003) and Hurst (2013) to evaluate their attitudes and beliefs toward international agricultural issues. Reliability of the instrument was established by the author and previous researchers (Wingenbach et al., 2003; Hurst, 2013). A paired-sample t-test was used to analyze data. An alpha level of .05 for significance was established a priori. The qualitative data, collected through students’ reflections, explored their perceptions and understanding of international agricultural issues discussed by guest speakers in the course. Open and axial coding was used to identify emerging themes in the students’ reflections. Coding was conducted agreed upon by the authors through compilation. The reason for collecting both quantitative and qualitative data was to converge the two forms of data to bring greater insight into the problem (Creswell & Clark, 2007).

Results

On average, students increased their attitudes ($M = 4.98$, $SD = .37$) and beliefs ($M = 4.62$, $SD = .47$) toward international agricultural issues after being enrolled in an international agriculture course ($M = 5.07$, $SD = .45$; $M = 4.90$, $SD = .54$). The difference in their attitudes, .09, BCa 95% CI [-.43, .24], was not significant $t(12) = -.57$, $p = .56$, and represented a small-sized effect, $d = .25$ (Kotlrik, Williams, & Jabor, 2011). The difference in their beliefs, .27, BCa 95% CI [.75, .21], was also not significant $t(12) = -1.24$, $p = .24$, but represented a medium-sized effect, $d = .58$. (Kotlrik, Williams, & Jabor, 2011).

In the students’ reflections analysis nine themes emerged: awareness, culture, sympathy/empathy, help, lack, negative attitude, superiority, solutions, and thankfulness. Students reflected based on their own experiences and related the class discussion to their knowledge gained. Students described their learning experience as eye-opening to understand a situation not lived by themselves. In some cases, students demonstrated a negative attitude towards certain topics, such as climate change and insects as a food source, they reflected disbelief and took it as a personal offense. In other occasions, some of the students’ reflections demonstrated attitudes of superiority compared to developing countries, taking a perspective that, as Americans, they can afford to conduct a practice as inexpensively as U.S. citizens. Nonetheless, students also reflected on how grateful and relieved they felt for their own quality of life and accessibility of resources to satisfy their basic needs compared to other countries.

Recommendations - Implications

Overall, students had positive attitudes and beliefs toward international agricultural issues before and after taking a course in international agriculture. This may be a result of their seniority within college as most of the students were seniors and juniors. Therefore, the [university] efforts to internationalize their education may have potentially contributed to the students’ current positive attitudes and beliefs toward international agriculture (Texas Tech University, 2015). The qualitative exploration provided a deeper understanding of the student
learning process through the international agriculture class. The themes that emerged reflect students’ thought process through these controversial topics and how they incorporated their own experiences and perceived challenges as future agriculture professionals. These reflect students cognitive, emotional, and social dimensions in their learning process as explained by Illeris’ Three Dimensions of Learning model (Merriam et al., 2007). It is recommended to include a service learning component and/or virtual experiences where students interact in the society to have a direct impact on international agricultural development. In this process the students may gain experience, imitation, and participation in which the student can benefit from the interaction with the community (Merriam et al., 2007).

References


Students’ Perceived Agricultural Entrepreneurship (Agripreneurship) Competence and Intent to Become Agripreneurs after a Project-based Learning Experience

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Introduction/Theoretical Framework
The International Labor Organization’s (ILO’s) 2015 report on global employment trends indicated approximately 43% of youth aged 15 to 24 were unemployed or underemployed and poor. Even though more African youth are graduating high school and college, a majority cannot find employment or remain underemployed (Gough, Langevang, & Owusu, 2013; Gyimah-Brempong & Kimenyi, 2013; Montpellier, 2014). In Uganda, depending on the report, youth unemployment ranges from 64% to 83% with poverty levels at 83% (National Curriculum Development Centre [NCDC], 2014; The World bank, 2015). Only 25% of the annual university graduates are able to find employment (Arinaitwe, 2014; NCDC, 2014). According to the World Bank (2013), by 2020, 10 million Ugandans will be looking for jobs unless new measures are devised to reverse this trend.

Uganda’s youth unemployment has been attributed to an outdated approach to education which fails to meet today’s needs, including an emphasis on theory over practice and applied learning experiences (NCDC, 2013). Moreover, the system was initially designed to meet the labor demands for public service at the time of Uganda’s independence in 1962 (NCDC, 2013). According to the ILO (2014), equipping young people with skills in agricultural entrepreneurship, i.e., agripreneurship, could help address challenges associated with poverty, including unemployment. Such an approach is likely to improve the quality of youth livelihoods and promote food security in communities (International Youth Foundation, 2014; Montpellier, 2014).

Agripreneurship emanates from the practice of entrepreneurship (Lans, Seuneke, & Klerkx, 2013; Uneze, 2013) and has many definitions. According to Macher (1999), agripreneurship is a “profitable marriage of agriculture and entrepreneurship – more plainly, turning your farm into a business” (p. xi). Although agripreneurship has “many characteristics of ‘generic’ entrepreneurship, [the concept] also has its distinct features due to the specific context of the agricultural sector” (Lans et al., p. 45).

This study was grounded in the theory of planned behavior as espoused by Ajzen (1987, 1991). Ajzen (1991) stated “perceived behavioral control, together with behavioral intention can be used to predict behavioral achievement” (p. 184). If individuals are exposed to entrepreneurial activities at an early age, including role models, that can influence their attitudes toward
entrepreneurial ventures and the likelihood of starting their own enterprises (Peterman & Kennedy, 2003). Moreover, according to Krueger, Reilly, and Carsrud (2000), “[i]tentions are the single best predictor of any planned behavior, including entrepreneurship” (p. 412).

**Purpose/Objectives**

This study’s purpose was to compare students’ perceived agripreneurship competence and their intent to become agripreneurs before and after participating in a training in the context of poultry keeping using a project-based learning approach. Four objectives guided the study:

a) Describe students’ selected personal characteristics;

b) Describe students’ perceived agripreneurship competencies before and after the training experience;

c) Describe students’ intentions to become agripreneurs in the future before and after the training experience;

d) Describe relationships between selected student characteristics and their intent to become agripreneurs.

**Methodology**

This study used a non-experimental, pretest-posttest research design (Campbell & Stanley, 1966; Creswell, 2013). Two boarding schools in eastern Uganda were purposefully selected and allowed their senior two students to participate in the study. The researchers randomly selected 140 students to receive the training on agripreneurship and implement what they learned in the context of poultry keeping through a project-based learning approach during the spring of 2016. The students’ perceived agripreneurship competencies and intentions to become agripreneurs were assessed using a five-point Likert-type scale: 1, *strongly disagree* to 5, *strongly agree*. The researcher-developed questionnaire had 33 items measuring six constructs about agripreneurship competence, as derived from the entrepreneurship literature (Bird, 1995; Mitchelmore & Rowley, 2010). A pilot test established the constructs’ reliability coefficients which ranged from 0.69 to 0.84.

**Results/Conclusions**

Students’ ages ranged from 12 to 18 years (*M* = 14.37). Their sexes were equally divided. A majority (70.7%) had not attended any entrepreneurship courses and 59.2% indicated they had *none* or *little* knowledge about agripreneurship before the training.

The construct of *endurance and risk taking propensity* had the largest mean difference (*MD*) of 1.17 (pretest, *M* = 3.06, *SD* = 0.41; posttest, *M* = 4.23, *SD* = 0.20). *Being visionary and futuristic oriented* was second with a *MD* of 0.98 (pretest, *M* = 3.50, *SD* = 0.05; posttest, *M* = 4.48, *SD* = 0.12). *Marketing and communication* was third with a *MD* of 0.97 (pretest, *M* = 3.41, *SD* = 0.06; posttest, *M* = 4.38, *SD* = 0.11). *Leadership and management of agricultural ventures* was fourth with a *MD* of 0.94 (pretest, *M* = 3.51, *SD* = 0.15; posttest, *M* = 4.45, *SD* = 0.11); *innovativeness and opportunity recognition* was fifth with a *MD* of 0.91 (pretest, *M* = 3.57, *SD* = 0.21; posttest, *M* = 4.48, *SD* = 0.18). And *a need for autonomy and control of agricultural ventures* had the smallest *MD* of 0.83 (pretest, *M* = 3.67, *SD* = 0.31; posttest, *M* = 4.50, *SD* = 0.03).

The percentage of students who were *likely* or *highly likely* to become agripreneurs increased from 65% to 82.9% after the training. Moreover, the participants who were *uncertain* or *undecided* declined by almost one-half from 23.6% pre-training to 12.9% afterward. No
significant relationships ($p < 0.05$) were found between students’ personal characteristics and their intentions to become agripreneurs.

**Implications/Recommendations/Educational Importance**

The students perceived their agripreneurship competence increased as a result of the training experience. More students indicated being likely or highly likely to become agripreneurs after the training. Students should continue to receive training on entrepreneurship (Alonge, 2015), which may increase the number of aspiring agricultural entrepreneurs for job creation (Peterman & Kennedy, 2003) in Uganda. Further, longitudinal studies should be conducted to determine the number of students who benefited from such training and became agripreneurs. Randomized control trials are also needed to compare other learning methods, which may be less resource intensive, to the project-based approach. Agricultural and extension educators should be enlisted to deliver programs calibrated to equip youth with agripreneurship skills.

**References**


Students’ Perceptions of Barriers and Benefits to Participating in an International Program: A Closer Look at One Land Grant University

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Keywords: Barriers, Benefits, International Programs, Perceptions, Study Abroad

Introduction

International programs (IP) have served as an enhanced educational experience at universities and colleges for decades (Hachtmann, 2012); however, IPs have gained attention as higher education institutions seek educational experiences to prepare graduates for a globalized workforce (Andreasen, 2003). Previous literature notes student interest in international experiences are mostly due to the effects it could have on their future, including increasing awareness of diversity, developing a global perspective, improving job marketability, and creating lifelong friendships (Kitsantas & Meyers, 2001). When selecting an IP, students engage in assessing the pros and cons of participating before committing (Estes, Hansen, & Edgar, 2016). These decisions, based on advantages and disadvantages of participation, should be examined by universities to provide opportunities and resources that align with students’ interests. Understanding students’ perceived barriers and benefits will enable efforts focused on increasing the number of participating students (Danjean, Bunch, & Blackburn, 2016). Although [University] students have shown positive perceptions to IP participation, participation numbers have not changed significantly in at least five years.

Purpose and Objectives

This study assessed students enrolled at the University of Arkansas in the Dale Bumpers College of Agricultural, Food and Life Sciences (Bumpers College) to understand their perceived benefits and barriers of participating in an IP. Two objectives guided this study:

1. Describe students’ perceived benefits and barriers of participating in an IP.
2. Determine student preferences for location of IP and communication methods about IPs.
Methods
This study utilized descriptive survey methodology; the survey population consisted of a random stratified sample by academic department (Trochim, 2001) of large-enrollment fall 2016 undergraduate courses in the Bumpers College. Sixteen courses participated in this study. Instruments were provided in paper form to students in the classes. Students were asked not to complete the assessment more than once. Usable data was collected from students \((N = 1,165)\) using a 15-question survey that was modified from previous research (Estes et al., 2016).

Results and Conclusions
Of the students who reported their classification \((n = 1,142)\), 39.9% were sophomores, 27.7% were juniors, and 19.3% were seniors. Students \((n = 1,059)\) reported if they were interested in participating in an IP, with 71.8% reporting they were interested and 19.2% not interested. Table 1 contains a complete list of perceived benefits. Table 2 shows responses to perceived barriers.

Table 1

<table>
<thead>
<tr>
<th>Benefit</th>
<th>(N)</th>
<th>(M)</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Looks good on a resume</td>
<td>1,163</td>
<td>5.46</td>
<td>0.77</td>
</tr>
<tr>
<td>Life-changing opportunity</td>
<td>1,163</td>
<td>5.45</td>
<td>0.81</td>
</tr>
<tr>
<td>Impact will last a lifetime</td>
<td>1,161</td>
<td>5.41</td>
<td>0.84</td>
</tr>
<tr>
<td>Make new friends outside of my comfort zone</td>
<td>1,160</td>
<td>5.31</td>
<td>0.85</td>
</tr>
<tr>
<td>Important aspect of personal growth</td>
<td>1,161</td>
<td>5.29</td>
<td>0.89</td>
</tr>
<tr>
<td>Sets me apart when applying for grad school/jobs</td>
<td>1,162</td>
<td>5.25</td>
<td>0.91</td>
</tr>
<tr>
<td>Change my perspective on life</td>
<td>1,163</td>
<td>5.21</td>
<td>0.96</td>
</tr>
<tr>
<td>Positive impact on my future career</td>
<td>1,163</td>
<td>5.20</td>
<td>0.88</td>
</tr>
<tr>
<td>Become a more well-rounded citizen</td>
<td>1,163</td>
<td>5.12</td>
<td>0.94</td>
</tr>
<tr>
<td>A very effective way to build job skills</td>
<td>1,161</td>
<td>5.12</td>
<td>0.91</td>
</tr>
<tr>
<td>Opportunity to work/live abroad after the IP</td>
<td>1,162</td>
<td>5.03</td>
<td>1.02</td>
</tr>
<tr>
<td>Enables me to tolerate ambiguity</td>
<td>1,160</td>
<td>5.03</td>
<td>0.95</td>
</tr>
<tr>
<td>Learn more about my academic field</td>
<td>1,162</td>
<td>4.96</td>
<td>1.02</td>
</tr>
<tr>
<td>Increased employability</td>
<td>1,163</td>
<td>4.92</td>
<td>1.00</td>
</tr>
</tbody>
</table>

**Note.** Scale used was 1 = Strongly Disagree, 2 = Disagree, 3 = Slightly Disagree, 4 = Slightly Agree, 5 = Agree, 6 = Strongly Agree.
Table 2

*Bumpers College Students’ Perceived Barriers to Participating in IPs (n = 1,159)*

<table>
<thead>
<tr>
<th>Barrier</th>
<th>n</th>
<th>M</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cost is too high</td>
<td>1159</td>
<td>4.79</td>
<td>1.12</td>
</tr>
<tr>
<td>Too busy with school</td>
<td>1158</td>
<td>4.35</td>
<td>1.17</td>
</tr>
<tr>
<td>Too busy with work</td>
<td>1154</td>
<td>3.91</td>
<td>1.49</td>
</tr>
<tr>
<td>There are not enough funding opportunities for me</td>
<td>1147</td>
<td>3.80</td>
<td>1.40</td>
</tr>
<tr>
<td>Courses offered in IP do not fit into my degree plan</td>
<td>1148</td>
<td>3.20</td>
<td>1.48</td>
</tr>
<tr>
<td>I am not aware of IP opportunities</td>
<td>1151</td>
<td>3.08</td>
<td>1.40</td>
</tr>
<tr>
<td>Lack of support from my parents</td>
<td>1152</td>
<td>2.66</td>
<td>1.48</td>
</tr>
<tr>
<td>Academic department does not encourage IP participation</td>
<td>1146</td>
<td>2.55</td>
<td>1.31</td>
</tr>
<tr>
<td>An IP will not help me academically</td>
<td>1153</td>
<td>2.25</td>
<td>1.27</td>
</tr>
<tr>
<td>I do not want to participate in an IP</td>
<td>1152</td>
<td>2.18</td>
<td>1.37</td>
</tr>
<tr>
<td>An IP will not help me become more employable</td>
<td>1156</td>
<td>2.15</td>
<td>1.17</td>
</tr>
<tr>
<td>An IP will not have an impact on my future career</td>
<td>1154</td>
<td>2.12</td>
<td>1.21</td>
</tr>
</tbody>
</table>

*Note.* Scale used was 1 = Strongly Disagree, 2 = Disagree, 3 = Slightly Disagree, 4 = Slightly Agree, 5 = Agree, 6 = Strongly Agree.

Students reported locations where they would like to participate in an IP. Table 3 lists the continents where students preferred to travel on IPs. Students could select multiple countries on a continent. In European countries, Italy (n = 417) was selected as the country of most interest. In Oceania, it was Australia (n = 246). In Asian countries, it was Japan (n = 46). For preferred African countries, it was South Africa (n = 58). Brazil (n = 68) was the students most preferred location in South America and Mexico (n = 25) for North America. Costa Rica (n = 17) was the most preferred location in the Caribbean.

Table 3

*Bumpers College Students’ Preferred Countries of Interest (N = 969)*

<table>
<thead>
<tr>
<th>Continent</th>
<th>n</th>
</tr>
</thead>
<tbody>
<tr>
<td>Europe</td>
<td>1991</td>
</tr>
<tr>
<td>Oceania</td>
<td>353</td>
</tr>
<tr>
<td>Asia</td>
<td>198</td>
</tr>
<tr>
<td>Africa</td>
<td>159</td>
</tr>
<tr>
<td>South America</td>
<td>147</td>
</tr>
<tr>
<td>North America</td>
<td>107</td>
</tr>
<tr>
<td>Caribbean</td>
<td>39</td>
</tr>
</tbody>
</table>

**Conclusions and Recommendations**

Students responses to the benefits outlined in this research noted they “agreed” with all statements. Students noted that IPs help build their resume (M = 5.46, SD = 0.77) and can have a life changing impact on them (M = 5.45, SD = 0.81). However, there was more variability in responses for barriers. It was noted costs (M = 4.79, SD = 1.12) and work (M = 4.35, SD = 1.17) and school commitments (M = 3.91, SD = 1.49) were the most readily identified barriers to lack of IP participation. The majority of the participants responded they would prefer to participate in IPs in European countries (n = 1,191) followed by Oceania (n = 353).
This research supports previous research by Estes and colleagues (2016) noting the pros and cons to studying abroad as reported in benefits and barriers. Understanding students’ perceived barriers and benefits will enable Bumpers College international program efforts to focus on increasing the number of participating students (Danjean et al., 2016). Researchers noted understanding why students studied aboard should be assessed (Estes et al., 2016). This research was the first step to this recommendation and will be used to guide Bumpers College IP development over the next few years. With shrinking institutional budgets and the desire to serve students in all educational areas, it is important to focus international programming areas on student needs and interests.

References


The Impact of a Short-Term Study Abroad Field Trip on Students in the College of Agriculture and Life Sciences at Texas A&M University

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Keywords: short-term study abroad, field trip, Mexico

Introduction  
With the emphasis higher education is placing on study abroad opportunities for undergraduate students in the United States, many universities are looking to provide varied types of international experiences which appeal to a multitude of students. Studies have shown the positive impact of long-term study abroad on students’ global awareness and intercultural sensitivity, but these programs are sometimes not feasible for students (Gaia, 2015). Short-term study abroad experiences have been shown to provide many of the same student benefits as long-term programs with the added benefit of having more students interested in participating (Beseli, et al., 2016; Chang et al., 2013; Harder et al., 2009; Klein, et al., 2007).

Short-term study abroad experiences vary in length, intensity, and location. One sub-set of this type of study abroad experience is the international field trip, which is defined as a program lasting less than five days in country (Xie, 2004). In the spring of 2016, Texas A&M University selected 13 students to participate in an advanced leadership program which gives outstanding students in the College of Agriculture and Life Sciences the opportunity to study and apply advanced leadership principles through mentoring, service-learning, scholarship analysis, and an international experience. These students had the opportunity to travel to the Hacienda Santa Clara located in the San Miguel de Allende region of Mexico. This four-day experience focused on intercultural leadership, food security issues, and service-learning.

Purpose and Objectives  
The research study conducted by Beseli et al. (2016), recommended future research focus on pre-trip and post-trip data collection emphasizing the experience of student participants in a short-term study abroad program. While short-term study abroad experiences are increasing in number in colleges of agriculture, there has been little research conducted on field-trip
international experiences. The purpose of this study was to begin to address the lack of research on international field trips by focusing on students’ perceptions of an international field-trip pre and post experience.

The objective of the study was to investigate the change in perceived feelings about an international experience before and after a short-term study abroad field trip.

**Methods**

This study abroad field trip and research design was based on Huba and Freed’s (2000) four elements of learner-centered assessment: (a) formulating learning outcomes, (b) developing assessment measures, (c) creating experiences focused on outcomes, and (d) using assessment results to improve learning. The learning objectives were set a-priori by the faculty members leading the experience and reflection questions were created to focus the students on the experience and provide ample assessment material. Experiences in-country correlated to the reflection (assessment) questions, and the results are not only being shared with colleagues but will also influence the study abroad field trip experiences for the students enrolled in the Spring of 2017.

Students were asked to describe their feelings toward the international field trip to the Hacienda Santa Clara both before the experience and after. Open coding and inductive content analysis was performed on the 13 pre-reflection and 13 post-reflection journal entries (Merriam, 2009). Researchers identified themes during individual content analysis, then compared themes to insure reliability and trustworthiness (Lincoln & Guba, 1985). The open coding produced six themes which emerged from the pre-reflection reflections and five themes which emerged from the post-reflection writings.

**Results**

Six themes emerged from the pre-reflection journals: (a) excited, (b) new cultural experiences, (c) specific program experiences, (d) anxiety, (e) traveling with the group, and (f) personal effect of the trip. All 13 students stated they were excited about the new experience. Being excited or “pumped”, as one student wrote, was the first thing all 13 students wrote about in their journal. The new cultural experiences theme was expressed as working with and among Mexican citizens. Specific program experiences focused on the objective guided experiences students were going to participate in (service-learning project, interacting with local leaders, visiting historical leadership sites, etc.). Six students wrote about being anxious about traveling internationally but five of the six students went on to say that traveling with a group of students they had spent almost an entire semester in class with helped calm their anxiety. Ten students wrote specifically on how they foresaw the trip impacting their personal and professional learning.

Five themes emerged from the post-reflection journals: (a) eye opening, (b) application of course material, (c) time frame, (d) group interaction, and (e) incredible experience. Nine students began their post-reflection journaling sharing how eye opening and impactful the experience was to them. Those students went on to add how specific experiences related to course objectives (service-learning, food security, leader interaction, etc.) made an impact on their learning. The other four students wrote how specific experiences increased their learning. Many of the students reflected on the time frame. Those who discussed time wrote they wished they had more time in country. Going with an established group of peers and faculty they had known for several months was important to their positive experience. The theme of incredible
experience manifested in students saying it was a “once in a lifetime” experience, “unforgettable”, and the “best experience I have had in college”.

Conclusions, Recommendations, and Implications

Based on the findings of this study, this international field-trip provided an impactful experience for the students that incorporated key leadership principles. Field trips can provide an increase in global competence with the added benefit of less time spent out of country, while still maintaining a meaningful connection to pertinent academic learning objectives. The reduced timeframe has been found to be appealing to some students and faculty (Beseli, et al., 2016) and costing less for the student (Xie, 2004) which can be a factor some students choosing to study abroad (Chang, et al., 2013). Those involved in international agricultural extension and education should consider international field trips as a viable and innovative way to globalize curriculum and provide high-impact experiences for students.

References


The Impact of an International Service-Learning Project on Students’ Perceptions of Food Security

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Keywords: food security, service-learning, short-term study abroad, field trip

Introduction

Food security, especially in a global context, is a topic which is of upmost importance. Integrating complex global topics into undergraduate curriculum is not only becoming more common, it is imperative to improve students’ ability to understand the global marketplace (Kurt, et al., 2013). Study abroad is one way to globalize curriculum and aid students in understanding complex topics, such as food security (Larson, et al., 2009). Short-term study abroad experiences are increasing in availability and popularity. Students reap the benefits of increased global awareness while not having to commit an abundance of time and resources (Kurt, et al., 2013). Adding a service-learning component to a short-term study abroad can help students connect course content and objectives to their international experience, creating the potential for deeper learning (Harder, et al., 2009 & Klein, et al., 2009).

Mezirow’s theory of transformational learning (2000) was used as the theoretical framework of this study. Transformational learning is the process of acknowledging ones’ assumptions, participating in a learning experience, then critically reflecting on the previous assumptions. Transformational learning has shown to be an effective way to measure changes in assumptions and perceptions of students who engage in an integrated international field experience (Rice et al., 2014; Wattianux & Crump, 2013).

Purpose and Objectives

Food security is a complex phenomenon that is often abstract in the minds of U.S. students. The purpose of this study was to study the effects an international service-learning project centered around food security had on students’ conceptualization of food security. The objective of this study was to analyze the change in perception of the term “food security” in students before and after an international service-learning project.
Methods

A qualitative research design was utilized to capture the full complexity of students’ assumptions and perceptions of food insecurity (Merriam, 2009). Reflective journaling has been shown to be an effective way to gather students’ thoughts for data analysis (Larson & Bruening, 2009; Rice et al., 2014). Students were asked to reflect on the question “what do you think of when you hear the phrase food insecurity” before they left on an international field trip and then after they returned. All thirteen students who were enrolled in the course completed the reflective journaling activity.

Deductive data analysis was conducted by the researchers on pre-flection and post-flection journal entries and inductive analysis was performed on the post-flection entries, then themes were discussed and categorized for trustworthiness and reliability (Lincoln & Guba, 1985). The deductive lens utilized was the Food and Agriculture Organization (FAO) of the United Nations’ (2008) definition of food security. They define food security as “all people, at all times, have physical and economic access to sufficient safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life” (p. 1).

Results

The students’ pre-flections were coded into three themes: (a) understanding food security, (b) some understanding, and (c) little to no understanding. Four of the 13 students showed little to no understanding of food security. Only one student capsulated the definition of food insecurity by writing “lacking the stability or the chance to access the food necessary for life.” Although this missed the concepts of safe and nutritious given by the FAO, researchers determined this to be very close to correct. Six students showed some understanding and all defined food insecurity as families worrying where their next meal would come from. Two defined it based on food safety “food might be poisoned”, two wrote they had “no idea” what the term meant, one student correlated food security (without defining it) to poverty levels, and one student wrote that food insecurity is “the lack of resources a community needs” but did not discuss food.

Post-flection deductive themes, although named the same, showed a difference in knowledge. All 13 students were now categorized in the understanding or some understanding categories, showing an improvement in their conceptualization of food security. Students’ responses went from “I think” to “I know” followed by the full or partial definition of food insecurity. The inductive themes which emerged from the data show how having a personal connection to students who experience food insecurity on a daily basis effected students’ transformational knowledge of the subject. The theme of food and nutrition was mentioned by many students. Food security was more than just food or a meal, it was about nutrition. One student stated “having limited access to healthy foods is not acceptable.” Another emergent theme was first-hand experience. Five students wrote how seeing children who endure food insecurity every day impacted their perception of the concept.

Conclusions, Recommendations, and Implications

From the results of the study, it can be concluded that the service-learning project focused on food security made a positive impact in students’ transformational learning of food security. Food insecurity became less of an abstract concept and more of a lived experience for the students. There was an increase in passion and personalization of the topic after the service-learning project. This finding supports the work of Harder, et al. (2009) and Klein, et al. (2009).
It is recommended that study-abroad programs include a service-learning component to increase students' global awareness of complex topics. The implications for international agricultural extension educators include the need for improved base knowledge of food security in U.S. students, and how the inclusion of a service-learning experience can improve students’ conceptualization of food security.

References


The Impact of Individual Farm Visits on Farmers’ Satisfaction with Extension in the Caribbean: Assessing farmers’ dependence on an Unsustainable Approach

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Keywords: individual farm visits, extension approach, farmers’ satisfaction, moderator

Introduction/Purpose/Literature Review

With the removal of preferential trade agreements with the EU, agricultural production has shifted to a wider range of commodities rather than a single export crop (Ganpat, Webster & Narine, 2014). As a result, Caribbean agriculture Ministries now serve a diverse farming population (Barker, 2009). Ganpat et al. (2014) stated that governments struggle to provide Extension to farmers due to Extension officers and farmers’ reliance on traditional extension approaches; some efforts though have been made to use more group and mass communication methods such as ICTs to provide extension services.

The traditional individual farm visit, effectively used in the past to provide services for the few large plantations, is still being used, even though the agricultural landscape has changed. Ganpat et al. (2015) noted such a personalized service cannot be sustained in era of severe financial constraints. Farm visits have been shown to be a very costly method of extension (Ali-Olubandwa et al., 2011; Nisha, 2006). Given the economic and farming realities, this study seeks to determine if a dependence on the traditional individual farm visits exists in selected Caribbean islands, and to estimate the impact of such a method on farmers’ satisfaction with extension services. If farmers are still dependent on the individual approach, even with the presence of other information sources and extension delivery methods, this suggests that some dependency maybe attached to an unsustainable extension method.

Methods

The study population was farmers of Trinidad, and the OECS (Antigua, Dominica, St. Lucia, St. Vincent, and Grenada). A non-probability sampling technique was used. A total sample (N = 717) comprised farmers from Antigua (n = 59), Dominica (n = 102), St. Lucia (n = 100), St. Vincent (n = 106), Grenada (n = 100) and Trinidad (n = 250). A closed-ended questionnaire was administered via face-to-face interviews. Respondents were asked to indicate their agreement or disagreement to 32 “satisfaction” statements on a Likert-type scale. Principal Factor Analysis (PFA) was used to reduce the farmers’ satisfaction scale into a concise construct. Only items with commonalities greater than 0.50 were included (Criteria 1) in the farmers’ satisfaction index (FSE). In a hierarchical regression, “frequency of extension visits” was included as a moderator in the relationship between farmers’ “country of residence” and “satisfaction with extension” (FSE).
Results

Most farmers were males, had low levels of education, and operated full-time on small crop-based farms. With respect to extension presence, most farmers reported annual or monthly contact with extension officers. They reported using other sources of farming information, and most did not belong to a farmers’ group.

PFA was used to extract a concise measure of farmers’ satisfaction with extension. Based on PFA Criteria 1, 20 items were used to assemble the Farmers’ Satisfaction with Extension index (FSE), which explained 60% of the variation in the original variables. FSE had a range of 0 to 1, with higher values indicating greater satisfaction with extension.

In a hierarchical regression model (Table 1, Model 1), the main effect of frequency of visits, and country of residence on farmers’ satisfaction (FSE) was determined. In Table 1, Model 2, the frequency of extension visits was specified as a moderator. The main effects indicate that farmers of all countries, except Trinidad, were significantly less satisfied with extension. With respect to the effect of the moderator (extension visits), results indicated that when extension visits were frequent in all countries, satisfaction with extension significantly increased at a higher rate when compared to Trinidad (illustrated in Figure 1). A high frequency of extension visits (significant moderator), had a positive net effect on the relationship between country of residence and FSE.

Table 1
The Impact of Country of Residence on FSE moderated by Farm Visits

<table>
<thead>
<tr>
<th>Model</th>
<th>Variables</th>
<th>β</th>
<th>SE</th>
<th>T</th>
<th>VIF</th>
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<td>Constant</td>
<td>0.56</td>
<td>0.01</td>
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</tr>
<tr>
<td></td>
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<td>0.02</td>
<td>-12.78***</td>
<td>1.14</td>
</tr>
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<td>0.02</td>
<td>-5.67***</td>
<td>1.24</td>
</tr>
<tr>
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<td>St. Lucia</td>
<td>-0.11</td>
<td>0.02</td>
<td>-6.51***</td>
<td>1.21</td>
</tr>
<tr>
<td></td>
<td>St. Vincent</td>
<td>-0.33</td>
<td>0.02</td>
<td>-19.05***</td>
<td>1.24</td>
</tr>
<tr>
<td></td>
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<td>0.02</td>
<td>-5.37***</td>
<td>1.21</td>
</tr>
<tr>
<td></td>
<td>Frequent visits</td>
<td>0.09</td>
<td>0.01</td>
<td>8.21***</td>
<td>1.08</td>
</tr>
<tr>
<td>2</td>
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<td>0.01</td>
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<td></td>
</tr>
<tr>
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<tr>
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<td>-0.15</td>
<td>0.03</td>
<td>-5.89***</td>
<td>2.94</td>
</tr>
<tr>
<td></td>
<td>Frequent visits</td>
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<td>0.02</td>
<td>0.65</td>
<td>2.87</td>
</tr>
<tr>
<td></td>
<td>Antigua*Frequent visits</td>
<td>0.20</td>
<td>0.04</td>
<td>4.80***</td>
<td>2.06</td>
</tr>
<tr>
<td></td>
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<td>0.04</td>
<td>2.03**</td>
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<td>0.03</td>
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<td>0.04</td>
<td>6.32***</td>
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<td></td>
<td>Grenada*Frequent visits</td>
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<td>0.03</td>
<td>3.37***</td>
<td>3.31</td>
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<tr>
<td>1</td>
<td>F (6, 716)</td>
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<td></td>
<td></td>
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</tr>
<tr>
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<td></td>
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<td></td>
</tr>
<tr>
<td></td>
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<td></td>
<td></td>
<td>10.78***</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Adjusted R²</td>
<td></td>
<td></td>
<td>0.48</td>
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</tr>
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</table>
Conclusion and Recommendation

The interaction between farm visits and country of residence on farmers’ satisfaction indicates a clear pattern; if extension visits are frequent, then all countries are more satisfied with extension. Alternately, if farm visits decrease, then farmers’ satisfaction with extension significantly decreases for OECS countries. Results strongly suggest that the frequency of farm visit is an important antecedent of satisfaction, indicating a dependency on a costly and unsustainable approach. However, frequent visits had a relatively minor impact on Trinidadian farmers’ satisfaction with extension. In Trinidad, the existence of a pluralistic extension system and use of ICTs may account for the lack of dependence on the traditional farm visit method.

OECS economies may not be able to effectively sustain the farm visit method in the long run, primarily because of the cost of using this method. While CARICOM policies promote ICT infrastructure, local governments must seek to actively encourage effective utilization of ICTs. According to Ganpat & de Freitas (2010) and Strong et al. (2014), extension officers of the OECS possessed the technical skills needed to utilize ICTs and there was relatively high access. It is recommended that OECS islands reduce their dependence on a financially unsustainable approach. Some key facilitating conditions exists for them to embrace other modern, more efficient information dissemination methods.

References


The Lived Experiences of Undergraduate Agricultural Education Students During a Short-Term International Experience

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Keywords: international experience, undergraduate, agricultural education

Introduction/Review of Literature

As part of the movement to internationalize higher education and produce globally competent graduates, many institutions of higher education have increased efforts to develop and promote international education opportunities for students (Childress, 2009; Parsons, 2010; Van Hoof & Verbeeten, 2005). The traditional view of study abroad has been redefined to include a range of designs for international experiences (IEs) for students (Dwyer, 2004). While the overall number of students participating in IEs has continued to increase, the latest report by the Institute for International Education (2015) revealed a decrease in long-term program participation and an increase in short-term program participation. Prior research examining IE program duration and impact is characterized by mixed findings. Dwyer (2004) found that full year or semester-long international experience (IE) programs were more beneficial to students than short-term programs. However, Chieffo and Griffith (2004) concluded that short-term programs are worthwhile endeavors that significantly and positively influence students who participate. Because of recent IE participation trends and gaps in relevant research, a closer look at short-term programs is needed to understand the impact of these programs on students’ personal and professional lives better.

Purpose and Objectives

The purpose of this study was to explore the lived experiences of agricultural education undergraduate students participating in a short-term IE. The overarching question that guided the study was: What were the lived experiences of agricultural education undergraduate students during a short-term IE to Nicaragua?

Methods/Data Sources

A phenomenological approach was utilized to capture the “common meaning for several individuals of their lived experiences” (Creswell, 2013, p. 76). Specifically, this study focused on the experiences of four undergraduate agricultural education students who participated in a
short-term IE in Nicaragua. Agricultural education undergraduate students at Louisiana State University were given the opportunity to participate short-term IE during the 2015 spring break holiday. The program components included (a) agricultural excursions, (b) cultural activities, and (c) service learning. Multiple sources of data were collected to develop an overall description of the essence of the students’ lived experience (Creswell, 2013). The sources of data collected for this exploratory study included (a) pre- and post-experience group interviews, (b) researcher’s observation field notes, and (c) students’ reflective journals.

The data were triangulated and analyzed to form themes in an attempt to describe the composite experiences of these students thoroughly (Creswell, 2013; Moustakas, 1994). Composite descriptions in phenomenological research consist of what and how the students experienced their time in [Country] (Moustakas, 1994). Quality, credibility, and trustworthiness were established through: (a) use of multiple sources of data, (b), thick, rich descriptions, (c) researcher debriefing, (d) questioning assumptions, and (e) reflexivity (Guba & Lincoln, 1989; Tracy, 2010). Further, ethical considerations in qualitative research are important for protecting the rights of human subjects (Tracy, 2010). Care was taken to address procedural, situational, relational, and exiting ethics while conducting this research (Tracy, 2010).

Results and Conclusions

Three themes emerged from the analysis of pre- and post-experience group interviews, researcher’s field notes, and students’ reflective journals (a) development of trust, (b) establishment of relationships, and (c) cultural awareness.

Development of Trust

The pre-experience group interview and initial field notes revealed feelings of apprehension among students. Interactions with locals were marked by hesitancy to engage and minimal use of communication tools. Student journals and the post-experience group interview suggested that students built trust based on explicit behaviors that they observed. At one point students observed the theft of another student’s wallet. It was later returned after the in-country host intervened. One student reported, the incident made her realize that she was putting a lot of trust in a stranger. She later wrote she believed his actions were directed at helping students feel more secure. During the post-experience group interview she recalled the theft incident from a place of confidence, “At this point my trust went through the roof. I knew everything was going to be okay if [our host] was there” illustrating that she had processed her earlier uneasiness and, possibly because she experienced no true problems during her experience, only remembering the feelings of trust.

Establishment of Relationships

The experience contributed to the formation of close bonds among students and locals. The group began to bond, almost immediately, as part of the social time spent together with the in-country host, staff, and locals. The young women in the group forged friendships with citizens working at local restaurants. One student reported that she “became comfortable with the idea of being away more easily because of this amazing bonding experience,” while another student reported that the social time “was great for fostering a sense of community among those of us in the program.”
Cultural Awareness
Finally, students increased cultural awareness, comparing personal cultural beliefs with those of previous generations. “The generation before us put such a negative connotation on anything abroad. It has a lot to do with September 11. That makes them think negatively about anybody outside of the U.S. but I feel like our generation is going to be the one to reverse that and be more aware of what is going on in other countries.”

Recommendations/Educational Importance

Practice
Based on findings of the study, departmental faculty should continue to provide short-term IEs for students. Further, departmental faculty should consider including more opportunities for cultural interactions between students and locals during short-term IEs. Finally, when faculty members are designing short-term IEs, they should consider using a cultural competency model when deciding which educational experiences to be included in the program.

Future Research
Researchers should focus on the cultural competence undergraduate students gain from short-term IEs. Investigating short-term outcomes like cultural awareness, knowledge, and sensitivity would provide linking evidence for overall cultural competence (i.e., behavior change) (Winters, 2013). Future inquiries should not only focus on cultural competencies gained by undergraduate students, but other competencies that students gain from short-term IEs. For example, use of international agriculture concepts, language and communication skills, and relationship building all support the acquisition of cultural competence and are observable measures of behavior change.

References
The Role of Urban Trees: Should they be a Factor in International Extension Water Conservation Programs?

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Keywords: environmental conservation, extension programming, international extension, urban trees, water conservation

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Introduction

Globally, Extension’s role in protecting natural and forest resources is increasing (Johnson, Creighton, & Norland, 2006). Urban forestry is the maintenance of private and public urban trees and related resources to help sustain urban forest cover (Nowak, 1994; USDA, 2010). As part of the green infrastructure that comprises a city’s ecosystem (American Forests, 2016), healthy urban forests provide economic, environmental and social benefits (Nowak, Noble, Sisinni, & Dwyer, 2001), and decrease dependence on natural resources through food production, and energy and water conservation (Heisler, 1986; McPherson, 1990; Meier, 1991; Rowntree & Nowak, 1991). Of interest to this study is perceived value of environmental conservation and perceived benefits of trees related to water conservation. Extension professionals may realize that their target audience’s perceptions about the role of environmental conservation has a relationship in safeguarding water resources, thus a specialized approach in water conservation programming may be beneficial (Oladele, 2012).

Extension’s role in protecting natural resources is pronounced in urban areas, where significant population concentrations often result in exhausted resources (Nowak et. al., 2001). In 2000, about 3.1% of U.S. land was considered urban (Nowak, Walton, Dwyer, Myeong, & Kaya, 2005) and supported 79% of the country’s population (USDA, 2010). This is expected to increase to 8.1% in 2050 (Nowak & Walton 2005), and urban population density is likely to further strain natural resources. Similar trends are expected globally (United Nations, 2014). Given the critical role urban forestry plays in maintaining environmental quality and human well-being (USDA, 2010), and expected population increases in urban areas, Extension’s role in urban forestry is likely to have implications for water conservation (Bruce & Johnson, 2004).

Purpose and Objectives

The purpose of this study was to examine the role of urban trees in water conservation Extension programming. The objectives were to: (1) Estimate current engagement in water conservation based on perceived tree benefits and importance of environmental conservation;
and (2) Estimate future intent in water conservation based on perceived tree benefits and importance of environmental conservation.

**Methods**

The target population was United State home landscape irrigation users. A non-probability sampling technique was employed to access the sample \( (n = 1620) \) using an online survey company and administer a researcher-developed questionnaire. Study variables were: importance of environmental conservation (EC), tree benefits (TB), current engagement in water conservation (CE) and future intent to conserve water (FI). Two linear regression models were used to estimate the relationship between each dependent variable and independent variables. The models were defined as:

\[
CE = f (TB, EC) \quad \text{Eq. 1}
\]
\[
FI = f (TB, EC) \quad \text{Eq. 2}
\]

Environmental conservation was measured on a five-point scale where 1 = *not at all important* and 5 = *extremely important*. Tree benefits were calculated using statements regarding individuals’ perceptions of economic, health and environmental benefits of trees in downtown areas. Scores ranged from 1 (no benefits) to 5 (very high benefits). Current engagement was calculated using descriptions of current water saving practices (i.e. use of rain barrels, smart irrigation, etc.) and future intent was calculated using likelihood of engagement in water conservation behaviors (i.e. calibrating sprinklers, adjusting irrigation times, etc.). Both current engagement and future intent were normalized to a range between 0 (no engagement or no intent to conserve water) and 1 (engagement or intent to conserve water). Equations 1 and 2 were estimated by linear regression, and coefficients of the independent variables were used to plot the relationship.

**Results**

Model 1 revealed that as both perceived benefits of urban trees and the importance of environmental conservation increased, current engagement in water conservation increased. Model 2 revealed that as perceived benefits of urban trees and importance of environmental conservation increased, future intent to engage in water conservation behaviors was high. Regression results are shown in Table 1.

<table>
<thead>
<tr>
<th>Table 1</th>
<th>Linear Regression Results for Current Engagement and Future Intent in Water Conservation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model</td>
<td>Independent Variables</td>
</tr>
<tr>
<td>1</td>
<td>Current engagement (CE)</td>
</tr>
<tr>
<td></td>
<td>Constant</td>
</tr>
<tr>
<td></td>
<td>Tree benefit (TB)</td>
</tr>
<tr>
<td></td>
<td>Environmental conservation (EC)</td>
</tr>
<tr>
<td>2</td>
<td>Future intent (FI)</td>
</tr>
<tr>
<td></td>
<td>Constant</td>
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<tr>
<td></td>
<td>Tree benefit (TB)</td>
</tr>
<tr>
<td></td>
<td>Environmental conservation (EC)</td>
</tr>
<tr>
<td>CE</td>
<td>(F(2, 1617))</td>
</tr>
<tr>
<td></td>
<td>Adjusted (R^2)</td>
</tr>
<tr>
<td>FI</td>
<td>(F(2, 1617))</td>
</tr>
<tr>
<td></td>
<td>Adjusted (R^2)</td>
</tr>
</tbody>
</table>

*Note.* **p<0.05; ***p<0.01
The combined effect of the independent variables for current engagement ($TBEC_{current}$) revealed conditions that best foster water conservation are present at level five where there is high perceived tree benefits along with high importance on the issue of environmental conservation (Figure 1). When these conditions are present, current engagement in water conservation increases more than the individual or marginal effect of tree benefits or environmental conservation alone.

![Figure 1](image)

*Figure 1.* The relationship between current engagement in water conservation, tree benefits and environmental conservation.

Findings were similar for future intent to conserve water ($TBEC_{future}$; Figure 2). When the same conditions existed at level five, the combined effect increased future intent to conserve water more than the individual effect of tree benefits or environmental conservation. Future intent to conserve water also increased more than current engagement at level five, suggesting that when perceptions of both tree benefits and importance of environmental conservation are high, they are likely to conserve more water in the future.
Conclusions and Recommendations

The results revealed greater perceived importance of environmental conservation and greater perceived benefits of urban trees increases the tendency for both current and future water conservation. When these conditions exist, Extension audiences may be more receptive to learning about water conservation practices. Therefore, urban forestry should be considered when promoting water conservation along with environmental conservation programs. Since both variables are complementary, they should be incorporated into conservation program planning as cohesive elements rather than detached items. This ideal condition was shown to boost current engagement and future intent. Although the results of this study were based on United States home landscape irrigation users, these concepts should be considered in international Extension programming to promote water conservation. This can be done by understanding the role of urban trees in water conservation and by increasing the awareness of their complementary relationship with environmental conservation.

References


**Twenty-first Century Perspective on the Agriculture Experiment Station: The Community Innovation Lab**

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**Keywords:** social science experiment station, innovation, community education

**Introduction**

Rewind…The Hatch Act of 1887 allocated federal funds to state land-grant colleges in order to create a series of agricultural experiment stations – their purpose, to educate agricultural producers about the latest innovations in practice and product through the Cooperative Extension Service. Many would argue that the Morrill Land-Grant College Act of 1862 as well as the Hatch Act of 1887 were legislation that changed the course of higher education in the United States (Herrn & Edwards, 2002; Simon, 1963). It’s true that major contributions have been made in improving society through agricultural research stations; but in today’s society there is a need for research that focuses on the more “human” side of society (Frederickson, 2016). Social progress has pressed us for a new type of experiment station – a model with a more socially-based focus. These new “social science experiment stations” would undertake and document research within community focusing on the social side of society – the “nuts and bolts” of interaction between individuals, groups, organizations and systems. With this focus, these experiment stations would contribute basic research to the idea of living with others in a progressive and innovative society. Fast-forward to today… researchers at the University of Kentucky have established the Community Innovation Lab (CIL).

**Purpose & Objectives**

The purpose of this presentation is to present an innovative perspective on research and education for the 21st Century. The Community Innovation Lab’s purpose is to explore, examine and apply educational innovations within local communities and relay the information to local, national and international communities.

**Methods**

In September 2014, three researchers at the University of Kentucky created the Community Innovation Lab. Within this lab, faculty undertake innovative research and educational projects that contribute to the body of knowledge within the community education field. CIL’s mission states:

*“Members of the Community Innovation Lab (CIL) seek to cultivate, apply and reflect on innovations associated with community learning and development within communities of*
place, practice and interest.” (Hains, 2016)

The lab is comprised of several individuals, including the director, co-founders, and lab associates and fellows. Two groups that play an important role in the lab are the CIL Fellows program and the International Consortium of Community Innovation. The scope of these groups is extremely different – the Fellows program is based in the Lexington-community while the Consortium operates at an international level – but both share the purpose to make connections that assist in exploring, examining and applying educational innovations within their respective communities.

**Results & Products**

Members and associates of the Community Innovation Lab develop and examine scholarly educational innovations within communities of practice, place and interest. Over the last two years, specific examples include: unique applications and evaluations of community education programming, novel approaches toward enhancing cultural dynamics within the context of consumer agriculture, and pioneering advances toward international community education. As part of their mission, CIL researchers encourage reflection on educational experimentation including the documentation of successes, failures, and lessons learned, furthering the body of knowledge within the social sciences. During their presentation, CIL co-founders will discuss challenges and implications of developing a social science lab, and the role the lab plays domestically and internationally within higher education for the 21st Century.

**Educational Importance & Implications**

As society has shifted, so have the educational needs of today’s rural and urban communities. As such, there is a growing need to explore and examine social science innovations in community education and consumer agriculture. The Community Innovation Lab was created to fill that void – to execute exploratory research that informs and enhances knowledge within the field of community education. Expressly, lab researchers and associates undertake research projects and outreach programming that focuses on scholarly educational innovations within communities of practice, place and interest. Basic research and programming of this type can help to broaden the audience and perspective of the (U.S.) Cooperative Extension system. In addition, through shifting educational and practical application within community education and Extension, we can encourage change towards more relevant educational practice in both domestic and international settings. Still, the major implication of this innovation is the paradigm-shift for those associated with the land-grant system, the Cooperative Extension system, and the agricultural community, in general. Exploring the process of living together is just as important as the hard science research that has been undertaken by Ag Research Stations for over a century. As educators, are we at a point to appreciate the need to research and understand our human-ness?

**References**


Herren, R. V., & Edwards, C. E. (2002). Whence we came: The Land-Grant tradition – Origin,


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Introduction

The U.S. Cooperative Extension Service (CES) involves collaboration between counties, states, and the federal government (Pope, 1958). In lesser developed countries (LDCs), national agricultural extension systems (NAES) are often only linked to governments, as opposed to local, decentralized agencies (Swanson & Claar, 1984). Most NAES in LDCs perpetuate the notion that adoption of advanced agricultural technologies will increase yields (Van den Ban & Hawkins, 1996), i.e., techniques diffused commonly in more developed nations. According to Rasmussen (1989), the philosophical and operational foundations of agricultural extension in the United States have been thoroughly documented, however, less is known concerning the origins of U.S. technical agricultural expertise in international agricultural development (IAD).

Purpose/Objective

The philosophical perspectives, including significant actors, events, and forces, that influenced and guided the U.S. approach to IAD were unclear. Therefore, the objective of this study was to understand the key drivers precipitating development of the U.S. framework for providing technical agricultural assistance abroad.

Methods

Historical research methods were used to achieve the study’s objective. Data were derived from primary and secondary sources and subjected to internal and external criticism to ensure accuracy and authenticity (McDowell, 2002). Triangulating multiple data sources supported the study’s credibility and validity (Tracy, 2010).

Findings

As early as the late 1800s, strong agrarian movements in America, e.g., The Grange Movement, sought farming practices to effectively reduce the negative environmental impacts of prolonged intensive tillage, such as soil erosion (Lal, Reicosky, & Hanson, 2006). According to Lal et al. (2006), an agricultural revolution, especially widespread use of the plow, had
invariably transformed America’s landscape. Moreover, sustained drought beginning in the 1920s over the Great Plains exacerbated the negative consequences of this transformation culminating with the 1930s’ Dust Bowl (Lal et al., 2006).

In 1933, the Franklin D. Roosevelt (FDR) Administration instituted its famous New Deal, i.e., the National Industrial Recovery Act (Fraser & Gerstle, 1989), which included programs to assist farmers. The New Deal codified soil and water conservation as a national priority, including funding to fight soil erosion (“80 Years of Helping,” 2016).

The early U.S. approach to IAD was modeled after the work of organizations such as the Near East Foundation [NEF] (“History,” 2016), which influenced the views of FDR’s undersecretary of agriculture and director of federal extension, Dr. M. L. Wilson (Allen, 1953), who witnessed the NEF’s work in Greece. Gilbert (2015) called Wilson and his like-minded colleagues agrarian intellectuals. Gifford Pinchot, first head of the U.S. Forest Service, reputed father of the U.S. conservation movement, and confidant to several U.S. presidents, led a decades-long crusade to globalize conservation and introduce an international audience to the use of natural resources through sustainable and economically viable practices (Jundt, 2014; Miller, 2013).

Minteer (2006) suggested the existence of a “third way tradition to the intellectual landscape of American environmentalism, a philosophical path that has been almost completely obscured . . .” (p. 2). This approach to environmentalism was advanced by Liberty Hyde Bailey, among other proponents. Their views on environmental pragmatism, e.g., Bailey’s Nature Study Movement (Connors, 2012), served as the philosophical foundation and direct experience that played a significant role in guiding the approach to technical agricultural assistance imbued in the U.S. government’s international development goals (Gilbert, 2015; Minteer, 2006). Bailey was an early leader in agricultural and extension education as well as chairman of the Country Life Commission which presaged establishment of the U.S. CES (Ellsworth, 1960; Foor & Connors, 2010).

Minteer’s (2006) third-way tradition offered an integrated and progressive perspective on land stewardship and traditional production agriculture and the intersection between human ideals, interests, and non-material values. However, the reforms espoused by Gilbert’s (2015) agrarian intellectuals during the 1930s were short-lived. The New Deal was defeated by old-fashioned power politics and most of its agrarian reform ideals also died (Gilbert, 2015). Many agriculturally focused New Dealers, however, pursued international careers after WWII, including former secretary of agriculture, Henry Wallace, Howard Tolley, chief of the Bureau of Agricultural Economics, and Wilson, who were thought to be directly influenced by Bailey’s views on environmental pragmatism (Gilbert, 2015).

Conclusions

By examining individuals responsible for developing the U.S. notion of conservation of natural resources, including the intersection of anthropocentrism, i.e., dominated by humankind, and its antithesis, nonanthropocentrism, their influence becomes observable (Minteer, 2006). Even though the agrarian New Dealers’ philosophies did not widely materialize, they did take aspects of their third-way tradition of decentralized, participatory rural development abroad (Gilbert, 2015). Many migrated to working in international settings, including post-WWII projects featuring agriculture and rural development (Gilbert, 2015). Their efforts intersected with and burthened the U.S. government-led international development initiatives that would become USAID (Gilbert, 2015).
After earlier attempts to convene a global summit on conservation, Pinchot finally succeeded when he presented his plans to President Truman (Jundt, 2014). Moreover, inspired by the success of the NEF, the Truman administration received approval from Congress in 1947 to offer technical assistance to Turkey and Greece (USAID, 1999). During his inaugural address in 1949, Truman announced plans to establish the Point 4 Program as Title IV of the Foreign Economic Assistance Act to provide technical assistance to LDCs (Paterson, 1972).

**Recommendations/Educational Importance**

We recommend strengthening understanding between academic traditions and with partners around the globe by contextualizing environmental and agricultural ethics within their historical, intellectual, and geographical settings while “deemphasiz[ing] the most radical aspects” of Environmentalism ideology (Chamberlain, 2010, p. 90). We also encourage development specialists to embrace Bailey’s Nature Study Movement (Connors, 2012), later understood as the third-way tradition and taken abroad by Gilbert’s (2015) agrarian intellectuals.

These actors argued participatory development and sustainable use of natural resources should be studied by all students in colleges of agriculture. We agree and also recommend exploring foreign influences on U.S. agriculture and environmentalism, including their philosophical primers. Clarity about high and low modernism and relationships to agriculture and an educated citizenry is also warranted, including the post-New Deal era and technocratization of agencies advising and regulating U.S. agriculture.

**References**


Unlocking the Mystery in the Black Box: Promising Psychophysiological Tools to Measure Skin Conductance, Heart Rate, and Facial Electromyography Responses

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Keywords: psychophysiology, skin conductance, heart rate, facial electromyography

Introduction
Anatomical and physiological research is not new in our field of study. Correlational studies with measures of visual field using the Group Embedded Figures Test were first published in the early 1990’s (Cano, Garton, & Raven, 1992). Additionally, Jewell, Stewart, and Shinn (1979) examined the effect of noise level on reading comprehension, while many others have recorded smoke, noise, and/or dust levels in agricultural mechanics laboratories (Dyer & Andreasen, 1999).

There are now tools available to further peer into the black box of the unseen to measure
cognitive, neural, and physical responses during information processing (Bartholow & Bolls, 2013). Potter and Bolls (2013) contend that psychophysiology measures allow researchers to “know why things happen the way they do and to understand the particular sequence of events that have to transpire in order to obtain a particular effect” (p. 10).

The effects of consumption of information influences psychological and behavioral responses and is a component undergirding more common theories within information processing, media psychology, and educational psychology which provide insights into how and why information or knowledge impacts an individual (Bartholow & Bolls, 2013).

**Purpose and Objective**

Our purpose to introduce the AIAEE research community to psychophysiology research. This research approach holds promise in helping researchers discover potential mediator or moderator gaps in our knowledge-base. The objective of this study is to present an overview of the data collection process and provide interested researchers an estimate of laboratory and data-collection costs.

**Methods**

Psychophysiology research must be collected in a controlled laboratory setting in individual sessions. Each participant is seated in a quiet, private room approximately four feet from a wall mounted flat screen television that provides a video treatment. Small electrodes measuring physiological response (e.g., skin conductance, heart rate, facial electromyography) are applied onto each participant’s forearms, left palm, cheek, and eyebrow. Skin conductance is collected by two electrodes on the left palmar surface. Heart rate is collected by two electrodes placed on the left forearm and one electrode on the right forearm. Facial electromyography is collected by two electrodes on the facial cheek over the zygomatic muscle (the muscle used for smiling), and two electrodes applied to the eyebrow over the corrugator supercilli muscle (the muscle used when furrowing one’s brow). Our laboratory is inclusive Biopac hardware and software which is a desktop-based data acquisition system that transforms participants’ physiological responses into digital signals for digital recording.

**Results**

Measured variables include attention, emotional response, and activation (engagement). Attention is defined “as the allocation of limited mental resources to specific stimulus” and is often referred to as cognitive resource allocation” (Ravaja, 2004, p. 201). Prior researchers have connected attention to heart rate: as heart rate decreases, the individual is placing more attention to the stimulus or the individual is taking in information. Therefore, a decrease in heart rate shows the participant is providing a more substantial amount of attention to that part of the video stimuli. Emotions have been defined as “biologically based action dispositions that have an important role in the determination of behavior” (Ravaja, 2004, p. 201). The contraction or movement of facial muscles is a direct indicator of emotional response (Ravaja, 2004). Facial electromyography (EMG) provides a direct measurement of the electrical conduction that occurs when facial muscles move. The zygomatic muscle is activated when smiling, while the corrugator supercilli muscle is activated when furrowing the brow. The activation of these muscle groups provides further support for positive or negative reactions to the stimulus. Finally, skin conductance is a measurement of the activation of the sympathetic nervous system, as the sweat levels in the eccrine sweat glands change as an individual processes information.
Costs include specialized training of faculty or graduate students, as well as capital-related expenses related to Biopac hardware and software, MediaLab presentation software, two PC’s (one to operate the AcqKnowledge software used by Biopac to collect the data and one to operate the MediaLab Presentation software to present the stimulus to the subject) and of course the laboratory, subject processing, and office space in which to operate. Typical start-up costs, excluding the cost of space, are approximately $18,500 (USD). Further, the following consumable supplies are needed: disposable collars for facial electromyography, disposable electrodes for skin conductance, disposable electrodes for heart rate, gel for heart rate electrodes, and gel for skin conductance electrodes at a cost of approximately $250 for 50 subjects. As data are collected at the individual subject level, trained technicians are required to be onsite with a back-of-the-envelope time estimation of approximately one hour per subject (depending on the complexity of the treatment). Other labor costs include video preparation, and many of the more common tasks involving IRB approval, data analysis, and manuscript development.

**Educational Importance**

Unlike paper-pencil assessments, psychophysiology research provides measures of a subject’s involuntary or “unconscious” responses to stimuli over time. Involuntary response measures promise to provide deeper insights into how learners or consumers feel about and react to stimuli and could potentially validate or invalidate assumptions of socially-acceptable responses which undergird more traditional attitudinal or perceptual measures. For example, inquiry into teacher burnout (Seidman & Zager, 1986) and teacher efficacy (Tschannen-Moran, Woolfolk Hoy, & Hoy, 1998) of beginning high school agricultural science teachers and persistence in the profession have consistently been reported as moderate to low while retention rates remain at critically high levels of first through third year teachers leaving the profession. Psychophysiology research may provide mediate or moderate more traditional measures of teacher burnout and teacher efficacy.

Previous media psychology research has used psychophysiology measures “to index theoretical constructs such as attention, arousal, and cognitive effort” (Ravaja, 2004, p. 194). Internationally, agricultural entrepreneurship consumer-related research is needed in lesser-developed economies and psychophysiology research has been recommended to better inform program faculty, students, Extension professionals, and practicing entrepreneurs of changing consumer needs (Baker, 2015).

**References**


Using a Global Delphi Process to Identify Capacities Needed by Rural Advisory Service Networks

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Keywords: Networks capacity assessment, Delphi, global

Introduction
The Global Forum for Rural Advisory Services (GFRAS) provides advocacy and leadership for rural advisory services (RAS), which encompass a wide variety of institutions that empower farmers and integrates them in agricultural innovation systems (Christoplos, 2010; Davis & Sulaiman, 2012). GFRAS reaches smallholder farmers via regional RAS networks, which are made up of national-level platforms. National platforms help prioritize local issues and formulate demands to the regional and global levels (Davis & Sulaiman, 2012). A critical first step to sustainably strengthen RAS networks is to establish a robust tool to serve as a baseline capacity assessment of RAS networks at the regional, sub-regional, and national level. To create the tools and methods for a meaningful capacity assessment, it is necessary to first identify the most important capacities a RAS network requires to be effective in organizational and institutional functioning, advocacy, professionalization, knowledge management, and information and communications technology (ICT) use.

Purpose
The purpose of this study was to develop an understanding of the capacities needed for a regional or national network to be effective.

Methods
The study was conducted using a three-round Delphi method, a research design to collect knowledge and create a consensus on a topic from a group of experts specializing in a specific area of interest (Ziglio, 1996). The Delphi process was conducted online through Qualtrics, an online survey tool, using the Tailored Design Method (Dillman, Smyth, & Christian, 2008). In round one participants were asked to list up to five of the most important capacities a RAS network needs for each of the five areas (organizational and institutional functioning, advocacy, professionalization, knowledge management, and ICT use) using a short phrase or word. Results from round one were thematically analyzed and consolidated. Round two captured the level of importance the expert panel assigned to each capacity identified in round one by indicating the
level of importance for each item on a five-point Likert-type scale (1 = Not at all important, 2 = Somewhat important, 3 = Important, 4 = Very important, 5 = Extremely important). A mean score greater than or equal to 3.25 was retained for the third round where they were asked to indicate if each item should be kept or removed.

Experts for the Delphi panel were nominated by the GFRAS secretariat in coordination with regional focal points. Each network was asked to nominate both internal individuals from regional network and external individuals familiar with the network. A total of 31 experts representing 10 regional networks and the GFRAS steering committee/secretariat participated in the Delphi process. The expert panel was 74.2% (n = 23) male and 25.8% (n = 8) female with an average of 18 years of experience with RAS (or similar activities).

**Results**

In round one the total number of responses within each of the five areas ranged from 122 to 131 (Table 1).

**Table 1**

<table>
<thead>
<tr>
<th>Area</th>
<th>Capacities Identified</th>
</tr>
</thead>
<tbody>
<tr>
<td>Organizational and institutional functioning</td>
<td>126</td>
</tr>
<tr>
<td>Advocacy</td>
<td>123</td>
</tr>
<tr>
<td>Professionalization of rural advisory services</td>
<td>122</td>
</tr>
<tr>
<td>Knowledge management</td>
<td>131</td>
</tr>
<tr>
<td>ICT use</td>
<td>128</td>
</tr>
</tbody>
</table>

The number of items eliminated within each area after the second round ranged from zero to 11 (Table 2).

**Table 2**

<table>
<thead>
<tr>
<th>Area</th>
<th>Items going in to Round 2</th>
<th>Items coming out of Round 2</th>
<th>Retained %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Organizational and institutional functioning</td>
<td>46</td>
<td>45</td>
<td>97.8</td>
</tr>
<tr>
<td>Advocacy</td>
<td>44</td>
<td>44</td>
<td>100.0</td>
</tr>
<tr>
<td>Professionalization of rural advisory services</td>
<td>34</td>
<td>34</td>
<td>100.0</td>
</tr>
<tr>
<td>Knowledge management</td>
<td>42</td>
<td>42</td>
<td>92.9</td>
</tr>
<tr>
<td>ICT use</td>
<td>62</td>
<td>51</td>
<td>82.3</td>
</tr>
</tbody>
</table>

After round three a total of 38 capacities was established for organizational and institutional functioning, 39 for advocacy, 24 for professionalization, 34 for knowledge management, and 39 for ICT use. The three capacities receiving the highest level of consensus within each of the five areas are seen in Table 3, as examples of the capacities identified.
Table 3

*Top Three Capacities Identified within Each of The Five Areas (as Examples)*

<table>
<thead>
<tr>
<th>Area</th>
<th>Top Three Capacities</th>
<th>Level of consensus</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Organizational and institutional functioning</strong></td>
<td>- Articulate a clear vision and mission for the network</td>
<td>100.0</td>
</tr>
<tr>
<td></td>
<td>- Use funds transparently</td>
<td>100.0</td>
</tr>
<tr>
<td></td>
<td>- Have outputs that are valued by RAS professionals, stakeholders, beneficiaries and policy/decision makers</td>
<td>96.6</td>
</tr>
<tr>
<td><strong>Advocacy</strong></td>
<td>- Have representation on national platforms/events</td>
<td>96.6</td>
</tr>
<tr>
<td></td>
<td>- Maintain strong partnerships with those involved in policy making to ensure RAS is visible</td>
<td>96.6</td>
</tr>
<tr>
<td></td>
<td>- Be able to articulate RAS stakeholder needs</td>
<td>96.6</td>
</tr>
<tr>
<td><strong>Professionalization of rural advisory services</strong></td>
<td>Advocate for RAS professionalization</td>
<td>96.6</td>
</tr>
<tr>
<td></td>
<td>- Provide an effective platform for information exchange and communication with other RAS professionals through face to face opportunities (e.g. sharing of ideas, tools, experiences, skills, approaches at meetings)</td>
<td>96.6</td>
</tr>
<tr>
<td></td>
<td>- Provide a clear vision of the role of a RAS professional</td>
<td>96.6</td>
</tr>
<tr>
<td><strong>Knowledge management</strong></td>
<td>- Provide an effective platform for enhanced learning and information exchange through face to face opportunities (e.g. meetings)</td>
<td>96.6</td>
</tr>
<tr>
<td></td>
<td>- Provide opportunities for networking through shared information/resources</td>
<td>96.6</td>
</tr>
<tr>
<td></td>
<td>- Make activities, products, best practices, and success stories accessible to stakeholders in a format they can use</td>
<td>96.6</td>
</tr>
<tr>
<td><strong>ICT use</strong></td>
<td>- Have tools that are seen as user-friendly</td>
<td>100.0</td>
</tr>
<tr>
<td></td>
<td>- Use ICT tools to disseminate information</td>
<td>100.0</td>
</tr>
<tr>
<td></td>
<td>- Connect nationally</td>
<td>100.0</td>
</tr>
</tbody>
</table>

**Implications and Recommendations**
Capacity is one major inhibiting factor for extension (Davis & Sulaiman, 2012). The findings revealed that a set of agreed upon global capacities for RAS networks can be identified. Based on the sheer number of capacities identified, it is obvious RAS networks are needed and have much to do to meet all of the capacities necessary to be seen as effective within the five areas of organizational and institutional functioning, advocacy, professionalization, knowledge management, and ICT use. Recommended next steps includes developing a capacity assessment instrument grounded in the results of the Delphi process and in network theory that can be used to assess current capacity levels within national fora and regional networks. The strengths identified across networks can then be compared and leveraged to develop a list of best
management practices from those doing well that can be shared with others that exhibit weaknesses. The capacity assessment could also be used as a baseline that can be conducted on a regular basis (every 5-10 years) to see how networks are changing and growing to address the needs of RAS globally.

References
Using an International Experience to Bridge the Gap between Culture and Science Literacy

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Introduction/Theoretical Framework/Review of the Literature

Today’s agricultural industry is charged with feeding a growing population (Food and Agriculture Organization of the United Nations (FAO), (2009) which means producing larger quantities of food and marketing the food worldwide (Heinert & Roberts, 2016). The National Research Council (2009) acknowledges the importance of university students to purposefully prepare to engage in a globalized world and to be prepared to engage in agriculture that uses both basic and applied science. However, undergraduates often lack knowledge that will assist them in a globalized world (Wingenbach, Boyd, Lindner, Dick, Arispe, & Haba, 2003). The theoretical framework that guided this study was Ajzen’s (1985) theory of planned behavior.

Purpose and Objectives

The purpose of this study was to explore how an international experience in South Africa impacted participants’ perceptions of South African culture, global agriculture, and science. More specifically, the objectives of this study were to:

3. 1) Describe how the participants’ perceptions of South African culture, global agriculture, and science changed throughout the short-term study abroad program.
4. 2) Describe how the participants will use their new knowledge in their future careers.

Methods

A qualitative approach was used because it allowed for a holistic approach in which words and feelings could be analyzed (Creswell, 1998). In agreement with Koro-Ljungberg, Yendol-Hoppey, Smith, & Hayes, (2009) constructivism was the theoretical perspective used for this study. Additionally, the epistemology used for this study was constructionism due to the assumption that meaning is constructed by the individual and multiple realities exist (Crotty, 2004).

Merriam’s (2002) basic interpretive approach was used because it allowed researchers to explore a phenomenon. Additionally, the researchers would like to disclose their interest in globalizing education programs and communicating science in order to acknowledge potential
bias of this study.

Participants were purposively selected based on their participation in the International Leadership Seminar for State Officers (ILSSO) and their enrollment in a University of Nebraska-Lincoln course designed to enhance their international experience. Seven undergraduate students (4 males and 3 female) participated in this study. All participants were Nebraska FFA officers during the 2015/2016 school year. The ILSSO experience took place in South Africa in January of 2016. Data was collected through pre and post experience questions and analyzed using thematic analysis. Specifically, the block and file approach was used (Grbich, 2007) to identify reoccurring words. Each piece of data was read three times and reoccurring words were color coded to identify themes. Each theme was given a name that aligned with the data. Trustworthiness techniques (Lincoln & Guba, 1985) were used to enhance the quality of this study. Two data collection methods and multiple researchers were used to ensure triangulation and to enhance credibility. Thick description of the themes aids in transferability (Dooley, 2007) and decisions of a methodological nature were recorded in a journal to ensure dependability and conformability.

Results

Upon data analysis, 10 themes emerged. Five themes emerged from the pre-experience questions (adaptability, need for enhanced communication skills, thirst for agricultural science knowledge, risk taking, and cultural learning) and five themes emerged from the post-experience questions (critical thinking, cultural awakening, overcoming communication barriers, knowledge gain in the agricultural sciences, and career enhancement).

Pre-Experience

Prior to South Africa, participants were eager to practice their adaptability (P1; P3; P4; P5). P4 recognized that there will be an adjustment period upon arriving in South Africa and that it will take some time to learn how to adapt to a different way of living. P5 looked forward to adapting to the surroundings by consciously altering her behavior. The need for enhanced communication skills emerged early on. P5 had trouble communicating with individuals due to lack of common interests. Interaction in South Africa encouraged P5 to engage in conversations with complete strangers. In addition, P2 stated, “if we are able to communicate with people in a different culture than it will make it easier to communicate with people in our own culture.”

Participants valued learning about agricultural sciences in South Africa. P5 was interested in the biotech crops that are being grown in order to increase yields in order to make agricultural production more sustainable. P1 perceived South African agricultural sciences to be developed in a way that utilizes scientific advancements within production agriculture. P1 and P6 looked forward to experiences that would take them outside of their comfort zone and force them to take risks. Cultural learning was also something that many of the participants were seeking. P1 wants to understand how other cultures live and how individuals view the world.

Post-Experience

Upon experiencing South Africa, participants learned how to critically think about situations and make quick decisions (P4; P5). P2 used critical thinking when making judgments about South African and United States agricultural practices and when thinking about what could be done to ensure that food is transported to people in need. Participants were amazed by the cultural differences and P1 realized the significance of being willing to set aside your differences
and learn about culture that is unfamiliar. P7 realized that effective communication began with effective listening, which helped to break communication barriers. Participants realized that the agricultural sciences were embedded in South African agriculture (P1; P2; P4; P5; P6). The entire international experience contributed to enhancement through knowledge of agricultural sciences, communication, and culture (P1: P5).

**Recommendations and Implications**

The findings from this research indicate that an International experience can and should integrate cultural learning, academic learning focused on science that is essential in today’s global agriculture industry, and should be a learning experience that can be applied to the participant’s future career. Participants went into this study abroad experience purposefully looking for new experiences that would remove them from their comfort zone, and promote self-growth. However, it is important to note that the cultural learning was intertwined with the academic learning which focused on becoming more scientifically literate within the agricultural sciences. This study should be used as an example of how to design and implement international experiences that integrate cultural learning, academic learning, and career readiness.

**References**


Using the Net Benefits Model to Evaluate Extension Volunteer Programs

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Introduction
Since its founding, the role of volunteers has been essential to the existence of the Cooperative Extension System (Schmiesing & Safrit, 2007; Stedman & Place, 2004); their involvement is fundamental to the successful implementation of all programs utilizing volunteers (Boone, Safrit, & Jones, 2002). Writing beyond the context of cooperative extension, Hager and Brudney (2004) explain the evaluation of volunteer programs is an area in need of further investigation. As extension services continue to expand and implement new programs in both domestic and international settings, as well as, recruit additional volunteers to aid in the implementation of these programs, Seevers, Baca, and Leeuwen (2005) discuss sound volunteer protocols and practices have emerged as a key criterion for extension program stability and growth. These sound volunteer management practices and procedures contribute to the longevity and sustainability of our programs. In order to develop stronger volunteer protocols, there must be a better understanding of the advantages of volunteer involvement in extension programs, as well as, the costs associated with the volunteer administration process.

In volunteer management literature, the cost-benefit ratio of volunteer involvement is often analyzed independently of each other; however, Kushner (2004) believed merging these two components together would allow for better evaluation of programs. Hager and Brudney developed the Net Benefits Model to analyze the “difference between benefits of volunteers and challenges in volunteer administration” (2004, p.27) in nonprofit organizations. This model was applied to selected UF/IFAS extension programs to assess the challenges and benefits of volunteer involvement.
Purpose and Methodology

The purpose of this quantitative study was to determine the net benefits of volunteer involvement in extension programs based on the volunteer management practices utilized by extension agents. This study surveyed extension faculty and staff responsible for volunteer programs to determine the net benefit to their extension program from volunteer involvement. Additionally, the study analyzed the UF/IFAS programs with high net benefits from volunteer involvement to determine characteristics in volunteer management practices that increase net benefits.

This study utilized survey methodology and was disseminated using Qualtrics. Over 200 extension faculty from four UF/IFAS extension programs were chosen to participate in this study. These individuals were selected because they also serve in the capacity of volunteer managers in their respective programs. Data was analyzed with SPSS software using univariate and bivariate analysis procedures, as well as, the net benefits formula.

Results/Conclusions

Findings from the study showed a difference in total benefits and total challenges among the programs analyzed; however, there was not a significant difference in total net benefits across the different programs. The 4-H program reported the lowest total average net benefits score while the master gardener program had the highest. When analyzing benefits and challenges individually, participants affiliated with the 4-H program reported high challenges in the volunteer administration process but also encountered equally high benefits due to volunteer involvement. When assessing the responses to individual items, respondents in the 4-H program reported time availability, lack of funding to support volunteers, volunteer recruitment and difficulty finding volunteers with appropriate skills and expertise as big problems in the volunteer management process, while master gardener affiliates reported these as small problems. These findings are consistent with Hager and Brudney’s (2005) study involving nonprofits, who reported to having many of the aforementioned problems as challenges in the volunteer management process and as a result had low net benefits scores. Another factor affecting the net benefits score of the 4-H program is the high number of volunteers utilized. A program is more likely to experience high challenges in volunteer administration if they rely on a high number of volunteers to aid in fulfilling program goals (Walter, 2016). Lack of funding was the greatest reported challenge across all program areas.

Implications and Recommendations

While this model was developed to be used within the context of nonprofit volunteer administration, its purpose can be extended to both domestic and international extension. While this study was specific to a particular extension service, its findings provide insight into how this tool can be beneficial for the future evaluation of extension programs; specifically, within the context of volunteer administration. As the cooperative extension service continues to expand its mission to the international community and as its programs continue to contemplate the role of volunteers (Stedman & Place, 2004), persons acting in the role of volunteer administrators can use this model to assess the impact of volunteers in a program at a singular time or longitudinally. As long as volunteer recruitment and retention continues to be a priority for our extension, nonprofit, and nongovernmental organizations, volunteer management must be studied and implemented as a science.
References
What Courses Do I Need to Teach in Order to address Food Insecurity in Sub-Saharan Africa? A Delphi Study

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Introduction

With a current estimate of 795 million people suffering from chronic hunger, global food security maintains its position as a critical component of responsible development (Food and Agriculture Organization of the United Nations [FAO], International Fund for Agricultural Development [IFAD], & World Food Programme [WFP], 2015). Sub-Saharan Africa (SSA) has struggled in its battle for food security due to meager crop production (Khan, et al, 2014), increased exports (Rakotoarisoa, Iafrate, & Paschali, 2011), and a population that has tripled in just thirty years (World Bank, 2016). Continuing social and political conflict across the region has made food security an even more complex challenge (FAO, IFAD, & WFP, 2015). Sadly, instead of accomplishing the first United Nations [UN] Millennium Development Goal of eradicating hunger, the region has increased its number of undernourished people by 44 million since 1990 (UN, 2015).

In response to this continuing crisis, and to begin addressing the second Sustainable Development Goal proposed by the UN to “end hunger, achieve food security and improved nutrition and promote sustainable agriculture,” (UN, n.d.), different organizations have been looking for approaches to address food insecurity in a more comprehensive manner (FAO, IFAD, & WFP, 2015). One of these approaches is through education. Gasperini (2000) argues that education is critical for achieving food security because it increases the economic capacity of the country. By enhancing people’s skills in disciplines related to food security, a region can more readily address the complexity of the problem (Nordin, Boyle, & Kemmer, 2013). Investing in skills and technical knowledge is fundamental for the overall development of a region (UNEP, n.d.). Thus, arming graduates with contextually relevant agricultural knowledge is crucial for providing the population with skills and capacities to not only improve their economy but to sustainably produce enough food in order to eradicate food insecurity (Nordin et al., 2013).

Curriculum focused on teaching food security to graduate students will enable them to engage in leadership positions within organizations, public services and different disciplines
related to food security in order to address this complex, multi-disciplinary challenge.

**Purpose of the Research**

The purpose of this research was to determine the topics and courses that stakeholders in SSA believe are necessary to address food insecurity in their region. The topics and courses suggested by the experts are a fundamental inside view of the food security phenomenon in the region. Building a distance-delivered graduate certificate on food security based on what local experts deem important will ensure local perspectives in the region are heeded.

**Methods**

The Delphi technique is a broadly recognized method used in research to achieve group consensus (Hsu & Sandford, 2007). The method is used to reach consensus through an “iterative multistage process” (Hasson, Keeney, & McKenna. 2000. p. 1010), allowing the researchers to obtain opinions systematically (Sackman, 1975). The methodology utilizes experts in a specific topic to achieve consensus (Turoff, 1970). The Delphi technique has been recommended for curriculum development (Linstone & Turoff, 2002; Custer et al., 1999).

A three-round Delphi study was performed with 50 experts from fourteen different countries in SSA. Experts were from academia and industry and were regarded as possessing in-depth knowledge about their own countries as well as the region in general. The selection of the panel was made through a nomination process in which US experts with experience in SSA nominated individuals from the region they believed had expertise in areas related to food security. In round one, the panel of experts was asked via email to answer a single question about which course topics should be included in a distance-delivered graduate certificate focused in global food security. Based on the responses to the question in round one, a Likert-type instrument was developed with the topics identified by the experts. This instrument was sent to the panel for the second round. Experts then ranked the topics based on their importance. Consensus for inclusion was considered to be reached when at least 75% of the panel indicated ‘agree’ or ‘strongly agree’ on the 4-point scale (Akers, Vaughn & Lockaby, 2001). The topics that did not reach the criteria were discarded. In the final round, topics that reached consensus in round two were grouped by the researchers into possible courses. The courses listed were randomized and returned to the panel with the request to score each course on a 10 point Likert scale according its importance from 1 = not important and 10 = essential.

Validity was addressed by having experts with diverse backgrounds and disciplinary expertise (Hasson et al., 2000), and reliability was achieved by having a sample larger than thirteen experts (Ludwig, 1997).

**Results**

The result of this research was a list of courses reflecting the principal issues that need to be taught in the region in order to address food insecurity. In round one, experts provided 102 topics and after round two, 21 topics were eliminated because they did not reach the agreement level. The remaining 81 topics were grouped into 28 possible courses that were ranked in order of importance by the experts in round three. The highest rated courses included: Value Chains in Food Security, Water Issues, Crop Production, Effects of Climate Change on Food Security, Human Nutrition, Technological Change in Food Security, Food Safety, and Food Production Systems.
Conclusions and Recommendations

The resulting courses are appropriate for the development of a curriculum focused on food security for SSA. The development of the curriculum and content requires faculty who possess the necessary skills and knowledge to give the courses and actually make an impact on the students. Also, these themes can be used as a guide to the important issues that need to be address in the region as indicated by local experts. Future research and action can be taken in those specific themes. It is recommended to do a comparative global study to show the specific courses deemed as important by local experts in each region of the world to more effectively address global food insecurity.

References


