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2014 AIAEE Poster Abstracts

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A Pictorial Example of a Farmer-to-Farmer Program:
Encouraging Rabbit Production to Meet Nutritional Needs in Haiti

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Introduction
Farmer-to-Farmer programs are described as programs that allow the transfer of high quality expertise from agricultural producers in the United States to individuals in other countries on a voluntary basis (Gilbert, 2005). These programs offer a unique opportunity to provide needed developmental assistance onsite in countries that desperately need advice, guidance and support. One of these critical needs relates to the expansion of agricultural skills to allow improved nutrition through the introduction or improvement of small animal production. Given that a large portion of production in poorer countries is accomplished through small-holder agriculture (Godfray, et al., 2010), there is a need to assist this population

Modernized relic technologies have been documented as having potential in serving the needs of smallholder farmers in developing countries (Hynes, Edwards, & Murphrey, 2009). Rabbits have been documented as having high nutrition value while at the same time being able to be produced with low input and under less-than-desirable conditions. Lukefahr (1999) proposed rabbit micro-enterprise development as a means of securing food and economic stability of rural farm families in the western hemisphere due to the potential for small scale production.

Haiti is a geographically small country located in the Caribbean with a population of almost ten million (Central Intelligence Agency, 2013) that is in need of this type of assistance. In fact, following the massive 2010 earthquake, this need expanded. The need for food production assistance that is compatible with smallholder farmers' farm size and resource access is critical.

Purpose/Objective
This poster will provide a pictorial example of a Farmer-to-Famer program in action through the depiction of a Farmer-to-Farmer program through Partners of the Americas during Summer 2013. Rabbits are a relatively new food source for people in Haiti. In fact, starvation forced many individuals to experiment with using rabbits as a food source after the 2010 earthquake due to the lack of other options. Rabbit meat has become increasingly more culturally acceptable and is now more widely available in markets and even in commercial grocery stores. During a two week engagement, the lead author travelled throughout Haiti as a volunteer rabbit
farmer visiting small farmers who were recently using rabbits to feed their families and embarking on the development of micro-enterprises focused on rabbit production.

Results/Conclusions

As a volunteer farmer the primary objective was to serve as a change agent, educating individuals in villages about the advantages of raising rabbits in their backyards and educating them regarding the best practices that were compatible with their current situations. The attributes of rabbit production such as small size and simple housing requirements make this type of meat production a viable and advantageous option for rural and urban areas. Focus of the training included specific and purposeful involvement of women and children in rabbit breeding and vending projects. This poster will provide an overview of the project along with key lessons learned and change strategies employed during the program.

References


An Evaluation of International Agricultural Public-Private Networks: Comparative Case Studies from the Philippines and Ghana

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Introduction
Swanson and Samy (2002) argued that more effective agricultural extension programs can be delivered if public, private, and non-governmental organizations (NGOs) form public-private partnerships (PPPs). Each organization in a PPP has comparative advantages; public extension is well suited to address a range of natural resource and farm management issues, the private sector possesses proprietary technologies, and NGOs are deeply rooted in local communities. Spielman, Hartwich, and von Grebmer (2004) noted that although PPPs have been seen by some as a panacea, there is a lack of empirical studies evaluating PPPs in international agricultural and extension education (IAEE).

Conceptual Framework
The researchers used social network analysis to evaluate the PPPs of two international agricultural development projects (Barnes, 1954; Rogers 2003).

Methods
The researchers evaluated the effects PPPs had on two IAEE projects using a case study approach. Stake (1978) described a case study as collecting data through personal observations and providing a complex holistic description of a bounded unit or system. The researchers increased credibility through data triangulation and extended engagement with communities; consistency was increased through data triangulation and reflexivity (Merriam, 2009).

Results
One researcher in the Philippines collaborated with an educational NGO, Sunrise Christian College (SCC). SCC received personnel and financial support from a partner Filipino-American NGO, individual investors, and donors. Two years ago the Filipino-American NGO unilaterally removed support to SCC. In response, SCC became more financially self-sufficient by charging tuition and introducing agricultural production projects. Permanent staff at SCC are Filipino; nearly all short-term IAEE volunteers are from North America. IAAE volunteers
designed a vocational agriculture program at SCC which is based on FFA education models, 4H curricula, and the Texas A&M University Junior Master Gardener Program.

One researcher developed an organic agriculture curriculum for the Ghana Institute of Organic Farming (GIOF). Funding to establish GIOF came from a Dutch NGO. A Dutch construction firm donated personnel and materials to build the institute. GIOF’s seven full-time faculty were retired or active Ghanaian public school agricultural educators. Six part-time faculty were recruited from a regional university to teach classes. GIOF’s head administrator had multiple unofficial (informal and unpaid) positions with the Ghanaian Ministry of Agriculture. The researcher was contracted by ACDI/VOCA, a U.S. based NGO, to serve as an agricultural curriculum development consultant with funding from the U.S. Government’s Farmer-to-Farmer program.

Conclusions
The term “public-private partnership” implies a simple relationship, but the evaluation of two PPPs in Ghana and the Philippines revealed complex financial and social networks between different international funding agencies, local communities, administrators, staff, and volunteers. The PPP networks appeared to provide benefits (i.e. funding, technical expertise), however researchers also observed negative (i.e. clashes over missions, administrative decisions) effects. Differences in cultures, language, and social norms can mask the complex social networks of PPPs. The researchers suggest using logic models incorporating the PESTLE (political, economic, social, technological, legal, environmental) diagnostic tool to better understand complex PPPs.

References
Analysis of Global Dynamics and Cultural Knowledge: Revealing Assets to Develop the Opportunities

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Introduction
As we find ourselves in the second decade of the 21st century, cross-cultural competency is required more than ever in the skills tool box for extension educators in large regions of the United States. While international tends to focus on activities outside the borders of the USA, the idea of global dynamics and cultural knowledge recognizes the international connectedness and cross-cultural interactions which exist within communities in the United States. Global dynamics and cultural knowledge—however it is acquired—relates to an increased acknowledgement of the gap in cross-cultural skills among extension educators.

Purpose/Objective
Cultural boundaries are more complex now. Some regions of the country bordering Indian country have historically had cross-cultural boundaries. Today, the USA continues to be a country of immigrants while fulfilling a UN member responsibility to offer resettlement opportunities to refugees. As a result, extension educators are working with an increasing mixture of clients who are migrants. The newest waves of immigration spanning nearly three decades, expands the cross-cultural mixing in some parts of the country. An organization perceiving itself to be a responsive outreach program addressing the needs of the citizens, needs therefore to assess the extent to which the perception matches the reality of being cross-culturally adept and internationally astute for working with diverse learners.

Extension is planning for a future to include a workforce that:

- is prepared to participate in addressing global development challenges;
- develops programs incorporating global dynamics and cultural knowledge into the educational, research and outreach activities of the organization;
is efficient and effective as an organization sharing resources and cooperating with colleagues in the Extension system;

- strengthens its use of intercultural skills by Extension faculty and staff working in diverse domestic and international contexts; and

- improves programming through the inclusion of information on the implications of global dynamics and cultural knowledge within the local, regional, state and/or national context.

**Methods/Results**

Prior to building the bridge, it was important to assess the local assets to determine the available foundation.

In June 2012, an online survey was sent to 300 plus members of the Extension program offices. The survey assessed the work of extension staff relating to global dynamics and cultural knowledge. The assessment compiled cross-cultural experiences of educators with Indian communities, migrant communities, and international experiences. In addition, the survey identified educators currently using these skills in their programming as well as those seeking professional development to incorporate more of this into outreach programs. The inventory of assets was compiled from 240 respondents.

**Conclusions**

This poster presents the major findings of the analysis generating an inventory of experience, skills and programming which will be the foundation for implementing the Global Perspectives and Strategy initiative to enhance the extension educators’ cross-cultural skills with the goal of more effective programming with diverse communities in which they serve. The long-term impact is to have extension educators who interact with program clientele using global dynamics and cultural knowledge to ensure the success of each person’s participation in the programs.
Are Professors Inclined to Participate in International Program Activities?

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Introduction/Need for Research  
Developing countries have been the major focus for livelihood technical assistance and countryside development from funding sources like the United States Development Assistance Program. The agriculture sector receives a substantial portion of this assistance to address the food security and environment sustainability in assisted Third World countries. Likewise, U.S. land-grant universities are institutions uniquely suited to provide technical agricultural information and services in agricultural research and extension programs needed by developing countries.  

The purpose of this study was to identify the motivational factors affecting faculty members with different academic ranks regarding their involvement in international program activities. Specifically, it aimed to: a) develop a profile of personal characteristics possessed by the faculty members with different faculty ranks; and, b) determine the sources of their motivation for involvement in international development activities.

Research Methodology and Conceptual/Theoretical Framework  
A survey instrument with a bipolar adjective scale was used for Section I (Personal Characteristic Profile) and a Scoring Likert scales for Section II (Origin of Motivation). The items in the instrument included education, farm background, assigned duties in the department and others. Both descriptive and inferential analyses were used. The descriptive procedure included frequencies, percentages, means and standard deviations. The software program Statistical Package for Social Sciences (SPSS) was used in the computer analysis of the data.  

The humanistic theory of motivation is a strong theoretical framework in this study which argues that behavior arises directly from underlying source of motivation (Arkes, 1982).
Results

When using alpha level .05, none of the 23 identified sources of original motivation was considered significantly different by faculty academic rank. The F probability values ranged from .077 to 0.996.

These results indicated that the faculty members from different academic ranks did not view differently the original sources of motivation in participating in international program activities. This seemed to counter an adage that the more established faculty members are more motivated in participating in international development activities than the new and younger faculty members.

Three of the 25 mean scores for personal characteristics were found significantly different by academic rank and these were: team player, objective, and sense of humor.

Conclusions/Implications

The younger and older faculty members had similar motivation for their participation in international development activities. The results provided useful information to help maximize the contribution the faculty can make to themselves, to their university, and to developing countries. It is also useful in policy formulation and strategic planning. In the profession, the data and information generated can be used in directing agricultural leadership in using strategies to reframe the human component of the organization for successful involvement of faculty in international program activities.

Recommendations

This study suggested tapping faculty members regardless of faculty rank to participate in international development activities. As perception and interest change vis-à-vis the university policies on globalization and internationalization, a periodic assessment on the level of interest by way of a survey or other forms of inquiry can prove to be useful in strategic planning at the college level.

References


Best Practices: Using Consortiums, and Collaborative Grant to Form Partnerships with U.S. Universities and Universities and Agencies in Ethiopia, Africa

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Introduction
This abstract explores the best practice and possibilities for building partnerships through consortiums and obtaining collaborative grants with universities in the northern and southern parts of Ethiopia, Africa.

Methodology
Through observational research, on-site visits and the review of previous successful partnerships, researchers compiled on site interview data. The researchers scheduled all day face to face interviews with ten different university presidents, and other members of the university leadership team and key Ethiopian government officials. The meetings were designed to be working meetings in order to obtain true and workable Memorandums of Understanding (MOU) between United States universities and Ethiopian Universities. The vehicle for being able to carry out all of the meetings and trips to Ethiopia is through a consortium for Sustainable Ethiopian Economic Development (SEED). SEED operates as a consortium of institutions of higher education and non-governmental organizations of the United States of America and the Republic of Ethiopia. The consortium was established in 2013.

Results
Following two separate trips organized through SEED, the first in July of 2012 and the second in October of 2013, partnerships, joint collaboration and MOU’s have been signed between U.S. universities and Ethiopian universities. In July of 2012 the consortium visited
Addis Ababa University, Bahir Dar University, Gondar University, Aksum University, and Mekelle University. In October of 2013 the consortium visited Adama University, Awasa University, Haremaya University, Dire Dawa University and Jimma University. The following Ethiopian governmental agencies were also visited, the Prime Minister of Ethiopia, the Deputy Prime Minister, the Minister of Foreign Affairs and the Minister of Education. This group also met with the U.S. Embassy Ambassador to Ethiopia and representatives of (USAID). From these visits Tarleton State University and the Texas Institute for Applied and Environmental Research (TIAER) at Tarleton State University has signed seven MOU’s for collaboration on projects and research. In the summer of 2013 (TIAER) conducted a watershed management workshop and invited five Ethiopia universities, and the universities that participated were Addis Ababa University, Mekelle University, Haramaya University and Bahir Dar University as well as Dr Eyasu Elias, National Project Coordinator, for the (CASCAPE) Consortium. CASCAPE is a consortium of six Ethiopian Universities (Addis Ababa, Bahir Dar University, Mekelle University, Haramaya University Jimma University and Hawassa University and Wageningen University and Research Center). As of date there are other projects and grant proposals being submitted with several of these universities and Tarleton State University.

Conclusions and Implications

Consortiums, project collaboration and fact-to-face work meetings can be very affective in linking universities in the U.S. with universities in Ethiopia. When all parties can meet face-to-face and work in real time on joint projects and grants the outcomes appear to be much greater for productive projects and successful grants.
Blogging through Uganda: A Way for Undergraduate Agricultural Students to Reflect on a Learning Experience in International Agricultural Development

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Keywords: Blogging; international experiences; undergraduates

Introduction/Need for Innovation
Oklahoma State University faculty delivered a project to catalyze communication networks to improve food security in Kenya and Uganda, 2011-2012. The project was funded by the U.S. Department of State. It supported the travel of experts and students studying food security issues to Africa for fact-finding and follow-up assessment of Africans who had traveled to the United States for training.

Russell and Vallade (2010) concluded universities were challenged to effectively quantify the academic outcomes associated with international learning experiences. They
proposed using “qualitative measures through reflective journaling [sic] to demonstrate change” (p. 109). In the Internet era, journaling purposively, as a way to reflect on and interpret the meaning of experiences and sharing interpretations with others, may include writing a weblog or blogging.

**How the innovative program works(ed)**

The project supported the travel of three undergraduates – two agricultural communications (AGCM) students and one agricultural education (AGED) student – to Uganda. The students created individual weblogs featuring their travel and posted to those blogs over two weeks.

**Results**

The students made 29 blog posts; two posts were made before the trip (i.e., “preflection”). A sampling of the bloggers’ followers’ reactions follow:

“Thanks [to] you for posting on your blog daily. It helps me feel like I am there.”

“. . . one of the most character building experiences I can imagine. Every American youth should participate in such an experience.”

“Think! You are bringing the realities of the world to many of us who are living vicariously through your adventure.”

One student reflected on the role of blogging as he continues to make meaning of his experience:

. . . . [B]eing able to go back at [sic] look at my blog posts week[s] and even months following the trip has allowed me to think back and remember every detail of the trip. . . . my thoughts in Uganda are forever captured and can be further processed, analyzed, and shared.

Another student stated: “Looking back on my trip, blogging was an essential element to my personal understanding and incredible experience during my time in Uganda.”

**Conclusions/Implications/Recommendations**

The students used blogging to share their international experiences (IEs) while reflecting on their learning. Bunch, Lamm, Israel, and Edwards (2013) asserted it “is important for agricultural educators to encourage and facilitate students in making decisions to gain IEs that stand to increase their employability.” Students’ participation in the IE described supported their assertion.

Faculty planning IEs should consider using student blogging as a form of reflective journaling and a way of assessing student learning (Russell & Vallade, 2010). Murphrey, Rutherford, Doerfert, Edgar, and Edgar (2012), however, cautioned that agricultural students may be more accepting of some technologies for learning than others, and the potential for adding value must be clear.
Costs

Travel cost was ~$4200/person, excluding local transport or entrance fees. The project incurred the expenses of two students and another’s partially, as they were participants in the project’s exchange and had special knowledge of U.S. agriculture, including AGCM and AGED.

References


Challenges of Documenting Best Practices for Water Quality and Health Education in a Developing Country

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Keywords: Ethiopia, Lifestraw, Water Quality, Water Contamination, Documentation Challenges

Introduction

Ethiopia is located in Africa’s Eastern Horn where drought and politics are two leading causes of water shortage. In a study conducted by Water.org, it was found that 42% of the population has access to clean water supply and only 11% of that number has access to adequate sanitation services (Ethiopia, 2013). As surface water sources such as springs and rivers dry up, remaining water sources are heavily contaminated by environmental waste. Internal parasites are a common occurrence, and water-related diseases are among the principal causes of death in children under five years of age.

In October 2011, Tarleton State University attended the Gondar, Ethiopia medical campaign developed by Jewish Voice Ministries International (JVMI). Tarleton representatives observed services provided to patients and identified partnership opportunities that would be mutually beneficial and enhance the overall qualitative impact of care provided by JVMI. This partnership was set to increase access to improved water resources, and therefore health in Gondar, by implementing an educational program developed by Tarleton research students, and distributing Lifestraw water filtration devices provided by JVMI (Brown, 2013).

Tarleton State University’s 2013 Gondar medical clinic students, along with a Tarleton professor, tagged and distributed 3,500 personal Lifestraws for future research. Each straw was marked with a number. Patients were educated on basic water quality, personal hygiene, and four main available water sources. Patients were told to bring the exact Lifestraw they were given, along with the tagged number, to next year’s clinic. Personal identification cards from the clinic were taken up when straws were distributed. Lifestraw numbers were then documented, along with the patient’s gender, age, and clinic treatment. Video footage and photos were also taken for documentary purposes as a recruitment tool for future Study Abroad students. Tarleton students and faculty will return to Gondar for the 2014 clinic to observe patients who kept track of their Lifestraw, and what quantity of those patients were treated for the same water-related illnesses as the year prior.
Difficulties documenting patient information and video footage frequently occurred, as students and faculty were educating and distributing Lifestraws at the same time. Awareness of surroundings and educational material is vital for program efficiency, as is recognizing cultural boundaries and remaining organized. There are several steps that can be taken in order to lessen the challenges that may arise while documenting best practices for water quality and health education in a developing country, such as Ethiopia.

It is recommended that all possible outcomes are noted prior to the 2014 trip so that any altering data does not occur.

University costs for this research include travel for the noted professor and data entry. Students must pay for their own travel and personal items, but scholarships are available for application through Tarleton State University and JVMI.

References
Communicating about Immigration Issues: Understanding Public Perceptions of e-Verify

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Introduction
Approximately 214 million people of the world’s population were residing in a country from which they were not born (United Nations Population Fund, 2010) and serve as essential agricultural workers. The United States, one of the largest migrant receiving countries, has recently been grappling with how to respond to undocumented migration patterns. The most recent legislation, the Legal Workforce Act (H.R. 1772), requires employers to check employees' work eligibility through an electronic verification system, e-Verify (National Immigration Law Center, 2013). E-verify allows employers to confirm employment eligibility information with data from national official immigration records (Rosenblum, 2011). The passage of this bill may impact agricultural employers’ ability to hire the workforce they need to keep up with current levels of production.

International agricultural educators inevitably encounter immigration issues and will need to communicate clearly about these issues (Friedman, 2006). This study aimed at examine the factors impacting opinions of whether e-Verify should be voluntary for all employers.

Methodology
Respondents’ perceptions about e-Verify and personal characteristics were captured
Respondents were asked to indicate their level of agreement with the statement “e-Verify should be voluntary for employers” on a five-point Likert-type scale (1 = Strongly Disagree, 5 = Strongly Agree). Respondents’ demographics, family background and experiences were also asked.

A public opinion survey research company was used to obtain a non-probability opt in sample. The survey to 656 Florida residents representative of the population and 507 responses were received (77.3%). Post-stratification methods were used to weight the data to compensate for potential exclusion, selection, and non-participation biases (Baker, et al., 2013). Descriptive statistics and comparisons using Chi-square statistics was used in the data analysis process.

**Results**

The results showed a significant association between respondents’ personal characteristics/experiences and level of agreement that if e-Verify should be voluntary for all employers. Demographic factors such as age ($p=.04$), gender ($p=.03$), family income ($p=.03$), and race ($p<.05$) had significant association with opinions over this statement. Personal/family backgrounds, such as if they or their parents were born in the United States ($p<.01$) mattered. Personal experiences, such as if you know someone who has immigrated to the US in the last 10 years ($p=.03$), and if they speak a language other than English ($p=.01$) also significantly impacted perceptions of e-Verify implementation.

**Conclusions and Recommendations**

Personal characteristics and experiences makes a difference with the opinions of if e-Verify should be voluntary for all employers. It is necessary for agricultural educators to be aware of these factors to educate and communicate about immigration issues. Agricultural educators should approach these topics carefully when discussing immigration with their stakeholders and decision makers. Immigration reform is an issue that many countries must deal with to ensure agricultural production is maintained. Obtaining and maintaining a viable agricultural workforce requires immigrant workers worldwide. To further understand this topic on a global scale, similar research could be conducted in another country and compared with these results.

**References**


Communication Channels Available for Chinese Farmers to Receive Information

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Key Words: China, communication, media, information, Rogers

Introduction and Need for Research

With a limited amount arable land, increasing population, and climate change, the food security is a concern for a large number of people around the world (Lobell & Burke, 2010). The situation in countries with large populations like India and China will have major impacts on global food security. China has large number of small-scale farmers who produce food to feed the whole country. Whether or not they have access to relevant information from reliable sources is critical for further agricultural development in China. Likewise, extension and advisory services (government and NGO) need access to farmers to determine needs and provide services. Communication channels (Rogers, 1995) are essential for the interaction.

Farmers account for almost 70 percent of total Chinese population and their situations are critical factor to a series of social problems (Jun, 2001). Zheng (2005) analyzed the rural labor force and found deficiencies in weak in receiving, processing, and utilizing information. These weaknesses limited their ability to adopt new technologies. This research aims to identify communication channels available to reach for Chinese farmers.

Research Methodology

This study used content analysis to synthesize available information sources (Ary, Jacob, & Razavieh, 2002). The researchers used a variety of search tools including academic literature searches and general web searches. Results were categorized using a constant comparative method (Glaser & Strauss, 1967).

Results

Four categories of information sources were discovered: websites, newspapers/magazines, TV channels, and agricultural promotion centers. A summary of key features is provided for each source.

Websites
• China Agricultural Information Network (CAIN)
• National Agricultural Technology Promotion Network

Newspapers/Magazines
• Most journals are academic journals or report latest policy or technology in agriculture.
TV Channels

- CCTV7: the channel for military and agricultural programs, started to broadcast since November, 30, 1995.
- For remote villages, they can get access to the programs through the platform of every village benefits.
- CCTV7 has a series of agriculture related programs cover agricultural forecast, technological training, agricultural economics, entertainment and agricultural politics.

Agricultural Promotion Centers

- Oriented by promotion institution: Agricultural promotion stations are oriented by government, and divided into five levels: nation, province, city, county and village.
- Driven by technology program: This program involves farmers, agricultural experts, technologist coordinator and government to work together.
- Market oriented: This model is similar to American farmers’ association, which organized the scattered and small sized farms together.
- Oriented by the third party: Academy of agriculture cooperates with local promotion stations.
- In general, most centers are faced with shortage of financial support, outdated promotion system, low education level of promotion groups and limited support from government and academic institutions.

Conclusions/Implications

In general, it appears that Chinese farmers have a variety communication channels by which to receive information. Conversely, extension and advisory service providers have multiple options for disseminating information and introducing new technologies. The access by farmers to each communication channel and the effectiveness of each channel is unknown and worthy of examination.

References

Curriculum Development and Research Opportunities through a Vocational Education Program in Haiti

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**Keywords:** curriculum development, international research, vocational education, social development, Haiti

**Introduction/Need for Innovation**

Agriculture generates nearly 25% of Haiti’s gross domestic product and employs more than 60% of the population (USAID, 2013). Most Haitians depend on small-scale subsistence farming which is vulnerable to natural disasters and widespread deforestation (USAID, 2013). According to the Trace Foundation (2012), education is a means to develop the social and economic welfare of a country. The Christianville Foundation is a non-profit organization established in Haiti to provide education and humanitarian assistance to the local people (Christianville Foundation, 2009). It has developed a four year vocational education program focused on basic agriculture and leadership as well as aquaculture, horticulture, food processing, small ruminant production, and small engine mechanics. This poster is a visual depiction of curriculum development and research opportunities with the Chrisitanville Foundation’s vocational education program.

**Theoretical Framework**

The theoretical framework of this poster is based on Bandura’s (1977) social cognitive theory (Figure 1). The Christianville Foundation is providing a means for impacting the personal and behavioral determinates of students through cognitive, attitude, and action interventions. The interventions enhance student’s education and content application techniques. Due to the nature of the reciprocal arrows in the model, broader impacts are made via environmental determinates (Bandura, 1977).
How the Innovative Program Works

The purpose of the vocational education program is to create healthy, resourceful, educated, and economically viable rural communities through increasing the income and socio-economic status of its participants. Through research and extension, the Christianville faculty are able to integrate their vocational program with rural school teachers and students in the surrounding areas. There is also potential to reach youth who are not enrolled in formal classes, but are interested in obtaining education in vocational agriculture.

The Christianville Foundation is located near the capital city of Port-au-Prince. The campus includes agricultural amenities for meat, vegetable, and fruit production and processing and related laboratories for research activities. There are also on-site accommodations to educate students and conduct research. The school has 1,000 students enrolled.

Conclusions/Recommendations

Through the lens of Bandura’s (1977) social cognitive theory, educators and researchers who collaborate and engage with the Christianville Foundation to provide curriculum development and conduct research will affect the student’s, and subsequently the country’s, social and economic status (Trace Foundation, 2012) in addition to developing their own repertoire. This innovative model of educational programming and potential for research is of interest of AIAEE membership. It provides an audience for curriculum development and application, and a location for new and ongoing research in Haiti.

Cost/Resources

Costs for individuals looking to provide vocational agricultural expertise to the Christianville Foundation or to conduct research include the cost of airfare to Haiti. Upon
agreement with the Christianville Foundation, food, room and board, and in-country transportation will be provided.

References
Designing Entrepreneurial Learning Around an Emerging Philosophical Approach to Development: Econutrition as a Food Systems Innovation

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Introduction/Need for Innovation

Econutrition is an emerging paradigm of interconnected problems and interventions involving community malnutrition, poor agricultural practices, and environmental degradation (Blasbalg, Wispelwey, & Deckelbaum, 2011). It suggests change agencies should integrate community programs to address these problems over time (Blasbalg et al., 2011).

The potential exists to create university curriculum featuring cases on Food Systems Innovation (FSI) entrepreneurship that examine strategies to mitigate poverty through the econutrition paradigm. For example, students can learn about the issues behind selecting and introducing appropriate FSI technologies and how entrepreneurial approaches could serve as a multisectoral intervention.

Per Rogers’ (2003) model, effective and ineffective ways exist for change agencies to diffuse innovations. This has vast implications for building local capacity through entrepreneurship. The agencies must understand an individual’s decision-making process in regard to adoption and how to speed the diffusion process while mitigating unintended and negative consequences (Rogers, 2003).

Methodology

By examining cases and researching innovations on improved practices for development, principles of econutrition (Blasbalg et al., 2011) and Rogers’ (2003) theory will be highlighted. These foundations will serve as the philosophical background for harnessing the forces of agricultural extension, human nutrition, and sustainable entrepreneurship. Organizations engaged in econutrition work will be studied to determine best practices and social and economic issues related to FSI entrepreneurship.

Blasbalg et al. (2011) explained that, even though some barriers to econutrition projects exist, their results have been cost-effective and impactful. Employing appropriate technologies
and relevant organizations stand to improve the outcomes of multisectoral interventions in underserved communities. Moreover, Navarro (2008) suggested effective solutions to poverty link local people, institutions, and their pooled indigenous knowledge with outside facilitators as “an interactive and integrative model of shared knowledge and joint discovery” (p. 75). This suggests any intervention a change agency considers introducing to a community must be *reimagined* through the local prism and implemented in culturally appropriate ways. By highlighting these issues, students will evaluate cases and develop team projects designed to mitigate poverty.

**Implications/Educational Importance**

Hynes, Edwards, and Murphrey (2009) examined the use of improved animal-powered technologies in Mali and suggested they were scale appropriate and capitalized on local practices. They also proffered that cottage industries could be established around these technologies if the existing artisans, e.g., “blacksmiths,” were trained in repair, maintenance, and *reinvention* (Rogers, 2003). This supports Navarro’s (2008) suggestion that technology transfer should involve “co-creation of knowledge” (p. 72) in which the community gives input at the outset of the intervention and ongoing feedback about the diffusion process (Rogers, 2003). Navarro’s (2008) position will be emphasized through the course. Further, cost of technologies may necessitate the formation of Farmer Interest Groups (FIGs) to facilitate sharing the resource burden and an innovation’s benefits (Swanson, 2008). The course will feature these and other factors augmenting integrated approaches to econutrition development. The poster presentation would amplify these points and be an ideal forum for receiving feedback from practitioners and scholars.

**References**


Developing a Model to Conceptualize the Continuum of International Experiences

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Keywords: International experiences, experiential learning

Introduction
The need for international experience is important for students involved in agricultural education. Students will face future careers that demand global competencies (National Research Council, 2009). Incorporating global experiences into curricula at the high school and university level have gained increased emphasis (Elliot & Yanik, 2002; Etling & Barbuto, 2002).

A review of available literature revealed a variety of experiences available to students. The researchers examined literature related to international agricultural and extension education and found evidence of a variety of experiences aimed at improved global education such as attending conferences (Rutherford, 2012); listening to presentations and having dialog with those who have worked long term in relevant countries; field studies/trips to view various agricultural practices and internships (Bruening & Shao, 2005); participation in online simulations (Boyd, Dooley, & Felton, 2005); viewing online videos (Harder & Bruening, 2008); long term service such as Peace Corps (Smith, Moore, Jayaratne, Kistler, & Smith, 2009); participation in study abroad programs (Sharp & Roberts, 2013); using technology (Krueger & Reese, 2002), and participating in youth exchange programs (Williams, Lawrence, Gartin, Smith, & Odell, 2002).

However, there are many challenges to gaining student participation with more involved programming. For example, Wingenbach, Chmielewski, Smith, Piña, Jr., and Hamilton (2006) cite four barriers to involvement in study abroad by undergraduate students in the college of agriculture: concerns about personal safety, language, financial, and being away from family and friends.

Perhaps students may become more involved with international experiences if given a range of international experiences based on differing contexts. The students who cannot afford or are unwilling to participate in a study abroad program may be willing to participate in something less involved such as viewing an online video. An analysis is needed to categorize existing international experiences to guide future research and practice.

How the Innovation Works
This poster is intended to begin the discussion about categorizing international experiences on four dimensions based on Roberts’ (2006) model of experiential learning contexts (Figure 1). This model frames the context of an experience on four dimensions: duration, level, setting and intended outcome. As international experiences can vary widely in multiple
dimensions, this model provides a theoretical foundation from which to categorize that variability.

Results/Conclusions/Implications
The preliminary analysis by the researchers has yielded an incomplete list of potential international experiences. This list was then synthesized with one dimension of Roberts’ (2006) model, level, to demonstrate the intended effect (Figure 2). Further research is needed to identify other experiences aimed at improving global education and then to categorize each experience using all four dimensions of Roberts (2006) model. The researchers intend to use the poster session at the AIAEE conference as one opportunity to share this innovative concept and to solicit feedback from AIAEE members for the continued development of this model.

References


Abstract

Viewing videos
Using technology
Participating in online simulations
Listening to presentations
Talking with experienced people
Attending conferences
Going on field studies/trips
Participating in youth exchange programs
Participating in study abroad

Concrete

Figure 1. Continuum of international experiences categorized using one dimension of Roberts’ (2006) model of experiential learning contexts.
Developing Educators’ Capacity to Integrate Curriculum and Improve Student Learning: Introducing Liberian Vocational and Math Instructors to Contextual Teaching and Learning through Agriculture

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Introduction
Liberia is a post-conflict country trying to reestablish its education and agriculture systems after experiencing brutal civil war during the 1990s (Murphy, 2003). A generation of Liberians, who were largely displaced and frequently forced into refugee status, had their education and economic livelihoods truncated for more than a decade. To assist in Liberia’s recovery, an objective of the USAID’s Liberia Food and Enterprise Development (FED) program is to develop the human capital of community college and high school instructors, including teachers of agriculture. USAID contracted U.S. educators to provide short-term technical assistance in this effort.
How the Innovative Program Works(ed)

The FED project supported two specialists to conduct a National Train the Trainers workshop in Liberia. The agricultural education specialist delivered five days of professional development (PD) focused on effective teaching methods. The other specialist, a U.S. math teacher, served as a presenter and resource during the workshop. A part of the PD was dedicated to contextualized teaching and learning (CT&L) emphasizing the Math-in-CTE model (Stone, Alfred, & Pearson, 2008). Day one was spent introducing the method, and day two was spent developing CT&L lesson plans for instructors’ use in their classrooms.

The model relies on contexts (i.e., situated cognition); agriculture was the initial and foundational context. In addition, teachers use strategies to prompt students to apply (or transfer) their understanding of the mathematics used in agriculture to other contexts (Parr, Edwards, & Leising, 2006; Young, Edwards, & Leising, 2009).

Selected Results

At the workshop’s conclusion, a focus group interview (Krueger, 1994) was done to determine instructors’ views on the workshop and their future PD needs. In all, 22 male instructors (9 agriculture, 10 mathematics, and 3 business) representing three community colleges and one high school participated in the training. A few of the instructors’ comments from the focus group interview follow:

“We need an additional week of training focused only on CT&L.”
“I think this method will help me become a better teacher.”
“I never knew how closely related all of our topics were.”
“I now have a context that is rich with mathematical examples to teach my students.”

Conclusions/Implications/Recommendations

Because of instructors’ interest in CT&L, PD providers should deliver more training on that topic. Moreover, researchers have identified agriculture as an effective context in which to teach math and science (Myers & Thompson, 2009; Parr et al., 2006; Young et al., 2009). Therefore, PD providers should also include science educators in the future (Pearson, Young, & Richardson, 2012). School leaders are encouraged to promote interdisciplinary teacher teams; i.e., communities of practice (Wenger, 1998), to develop integrated curricula situated in agricultural contexts. Future inquiries should follow-up on the instructors’ use of CT&L and assess its effects on student achievement.

Costs/Resources

The project incurred travel expenses and salaries of the specialists. The teachers were provided modest stipends ($5.00/day), lodging, and two meals/day to support their participation.

References

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Developing Mutual Metrics: A Conceptual Framework Integrating Agriculture, Food Security, Nutrition, Culture, and Local Governance to Improve Farmer’s Health Status and Rural Families

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Key words: mutual metrics or mutually-shared indicators, farmers health, agriculture, food security, nutrition, local governance, culture

Introduction

Farmers’ overall health status is not well-examined in the agriculture sector except for research done in relation to pesticide use and its impact to farmers health. Yet, the impact of farmer’s health to his/her productivity, livelihood, ability to support family, and well-being is immense especially when the farmer alone is the sole income provider in the household. The development of mutual metrics, a term coined by Nugent (2012), attempt to explore the idea of improving farmers’ overall health and his/her rural family, through collaborative partnerships with agencies and stakeholders engaged in agriculture, food security, and nutrition to share their resources – human and logistics – including expertise and experience. The results are solutions adopted that are inclusive, holistic, mutual, and agreed upon by all partners concerned. Local culture and local governance will also be examined as to how it impacts agriculture, food security, nutrition, and the the overall health status of the rural people.

Conceptual Framework

The conceptual framework of mutual metrics acknowledges the perennial problem of duplicating and overlapping programs among public agencies in the Philippines, dwindling financial and logistic resources, and highly bureaucratic and uncoordinated services and activities in agriculture, food security, and nutrition, that impacts on farmer’s overall health including that of rural families. The framework will then examine current programs on agriculture, food security, nutrition, and health including the basic responsibilities of local
workers engaged in these areas. The agencies targeted for examination include the Department of Health (DOH), Department of Agriculture (DA), Food and Nutrition Research Institute (FNRI), and the National Nutrition Council (NNC). The services provided by these agencies are complemented by provincial (80 provinces), city (143 cities), and municipal (1,491 municipalities) local governments to address basic health issues and concerns at the local level. The conceptual framework provides a strategy for how the government workers at the local level can collaborate, coordinate, cooperate, and join forces together so that a meaningful, relevant and sustainable system of providing quality health care to farmers and rural families will be achieved.

Results

With mutual metrics developed, the local workers such as Rural Health Midwife (Department of Health), Barangay Health Worker (Local Government Unit), Barangay Nutrition Scholar (National Nutrition Council), and the Agricultural Technologist (Local Government Unit) - will identify indicators that when combined, will consolidate similar tasks leading to working as a team rather than on an individual basis. The framework recommends a nutritional and health assessment of farmers and their families to gain insight on the health status of farmers and rural families. The agricultural production of these farmers will be assessed as well to determine whether their agriculture production meets the food security and nutritional needs of their families.

Conclusion

This conceptual framework is expected to combine the resources, skills, and knowledge of government workers involved in agriculture, food security, nutrition, and rural health. It is also expected to create a cohesive, functional, and viable environment for local government workers aiming to achieve similar goal of improving the health status of farmers and their families.

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Developing Reusable Learning Objects to Disseminate the Grand Challenges

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Keywords: reusable learning objects (RLO’s), grand challenges, information dissemination

Introduction
Reusable Learning Objects (RLOs) are self-contained, digital learning activities that are 2-15 minutes and include a learning objective, content, media, and an assessment (Dooley et al., 2011; Murphrey, Sandlin, Lindner, & Dooley, 2013). Koohand and Harman (2007) found RLOs as beneficial to disseminating specific information to broad groups of people. Strong (2012) reported RLOs disseminated extension information to a larger group of goat producers compared to traditional delivery methods.

Methodology and Theoretical Framework
Five challenges were identified by the College of Agriculture and Life Sciences through a year-long faculty led process. The data formulated five topics that encompassed complex issues associated with the global population increase (Texas A&M University, 2013a).

Results
The College of Agriculture and Life Sciences at Texas A&M University (2013b) initiated the five Grand Challenges. The first of the Grand Challenges is “Protecting Our Environment.” In order for agricultural success and sustainability to be possible, the environment must be healthy. Research is conducted to investigate concerns in, but not limited to, hydrology, biodiversity, climate change, and vegetation dynamics (Texas A&M University). The second, “Enriching Our Youth,” concentrates on the leadership development of students in agriculture students pursue through classroom enrichment, experiential learning, and a diversity of opportunities for field experience. High-quality agricultural and extension education degree programs exist to train and certify students to combat the issues facing (at risk) youth in both rural and urban settings in their career field Texas A&M University. Thirdly, “Improving Our Health” is a challenge adhering to the diverse health concerns associated with food production (i.e. biotechnology), drugs, and the complexity of the many health issues facing those around the world (i.e. disease, cancer) (Texas A&M University). “Feeding Our World” is the fourth challenge that addressed the global food crisis that exists with the increasing environmental challenges and population, and the decrease in natural resources Texas A&M University. The fifth, “Growing the Economy” incorporates areas from the four challenges to positively impact
the global marketplace Texas A&M University.

Conclusions/Implications

This dissemination method of international agricultural and extension education information not only addressed the five Grand Challenges, but also aligns with all five objectives of AIAEE that are outlined in Article II of its constitution. The [college’s] use of RLOs will cultivate knowledge gain within the college, as well as be an indispensable tool for universities and agricultural extension educators around the world. By fostering fellowship among other AIAEE members and cooperating with other entities, the five Grand Challenges issued by the College of Agriculture and Life Sciences will be disseminated globally to articulate five roles for international agricultural and extension educators in agricultural development.

Recommendations

The College of Agriculture and Life Sciences is dedicated to educating students and conducting research to provide solutions for these challenges. AIAEE members are in a unique position based on their respective location and agricultural and extension education expertise to assist with solutions that tackle the grand challenges our world faces. Developing and disseminating RLOs that address large scale global issues with assist AIAEE members in improving communities, students, and institutions, locally and globally.

Cost/Resources (for innovative programs)

Server Space—(Provided by the University)
Articulate Storyline Software—($1,500/to design the RLOs)
Staff or Graduate Student—(Cost varies/ to gather the RLO content from faculty and place the content into Articulate Storyline)

References

Effects of an Agribusiness Short-Term Study Abroad Program on Career Interests and Goals of Students

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Introduction/Theoretical Framework
As our society is gaining a more international focus, it is important that university students take advantage of opportunities that will increase their global mindset. Short-term study abroad programs can serve as an opportunity for students to increase cultural awareness as well as career choices.

Study abroad programs are known to have positive long-term impacts on students. Wallace (1999) suggested that study abroad programs lead to career advancement, personal accomplishments, and a greater appreciation for other cultures. In another study conducted with business students and their study abroad experience, researchers found that “students who studied abroad express more interest in positions with an international dimension than those who did not study abroad” (Orahood, Kruze, & Pearson, 2004, p. 125). In knowing this information about studying abroad, this study was conducted to determine if short-term study abroad programs had the same impact on students, specifically regarding career goals and interests.

Purpose and Research Methodology
This research study was conducted with North Carolina State University students that participated in an agribusiness short-term study abroad trip to Europe. The purpose of this study was to identify and understand how short-term study abroad programs influence the participants’ career interests and goals.

Twenty-two students responded to the electronically administered survey through Qualtrics, which consisted of both open and closed ended questions related to participants’
experience in the short-term study abroad program. Survey questions were created to gage participants’ career goals and interests prior to and after their short-term study abroad program experience. Responses were statistically analyzed and compared to see if and how their career goals and interests changed due to their study abroad experience. Common themes were collected through the open ended responses.

Results

The majority of respondents displayed that before participating in the short-term study abroad program, they were content with having a local career. After participating in the program, almost 70% of the respondents indicated they wanted to pursue careers with an international focus or travel opportunities. Over 80% of the participants stated that the program increased their global awareness. Students identified that the short-term experience abroad encouraged them to enroll in classes with an international focus for the remainder of their time at the university.

Conclusions

After reviewing the survey results, it can be concluded that the short-term study abroad program created a change in the participants to possess a more global mindset and seek careers with an international focus. Short-term study abroad programs influence students to seek a better understanding and greater knowledge of other cultures and international perspectives. There is more likelihood that short-term study abroad participants will be influenced by their experience abroad to pursue a career with an international focus.

Recommendations

Short-term study abroad programs can be used as practical means to help students gain effective international experience at a lower cost. Further research is needed to see if participants’ career goals and interests are influenced differently depending on the location of the short-term study abroad program.

References


Extension Model Development of Thai Fruit Production for Premium Marketing

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Keywords: Households, Fruit, Markets and Thai

Introduction
Fruits are important economic crops of Thailand. About 1.923 million households are devoted to fruit production. Thai fruits are popular in the premium market segment, but the volume for export is insufficient, therefore, it is necessary to develop extension model of Thai Fruit Production for Premium Marketing.

Purpose and objectives of the abstract
The objectives for this abstract were to study 1) the premium fruit marketing system, 2) best practices of farmer’s groups, and 3) the extension model development.

Methods and Data sources
This research and development project employed qualitative research methods. Three populations were: 1) exporters who sold longan, durian, mangosteen, mango, pomelo, and banana for export to the premium market; 2) farmer’s groups who produced mentioned fruits to exporters; and 3) governmental extensionists who worked involved in fruit production.

A purposive sampling method was used to select a sample from each population. A sample of eighteen 1) exporters, 2) best farmer’s groups and 3) government extensionists were chosen by each population in top three provinces which produced six kinds of mentioned fruit.

Data were collected and analyzed through qualitative analysis. 1) The premium marketing system was described by some strategies to meet premium marketing. 2) The data of the best practice of farmer’s groups were analyzed by Value Chain Analysis (Michael, 1985). 3) The extension model development described by the relation of Balance Score Card and SMCR.

Results and Conclusion
It was found that 1) premium marketing preferred to sell as contract farming. The premium products were graded by standards of size, peel, color, maturity and applied GAP. 2) Several best practices were identified. In terms of inbound logistics, the farmers grew the species of cultivars that were most in demand. In terms of operations, adherence to GAP standards was the key to produce premium fruit. As for outbound logistics, farmers emphasized...
harvesting and post-harvest management to reduce losses. Marketing and sales were enhanced by farmers timing their harvests to coincide with peaks in demand. For customer service, the farmers used cluster accountability system to build consumer confidence. As for firm infrastructure, farmers became cluster members to demand infrastructure. Human resource management was enhanced by the farmers giving good welfare to attract high-quality workers. As for technology management, farmers cooperated with institutions to improve productivity. As for procurement, most farmers bought supplies from cooperatives to build cooperative performance. 3) For the extension model development, government and private extensionists were played important role as a sender. The message contributed to the activities advantaged to financial perspective, internal business, customer perspective, and learning and growth. Channel was though personal discussion, group discussion, and field trip. Receiver was the farmer’s group.

Recommendations
The researcher proposes that the knowledge gained from this research will be collected more data from farmers to fulfill the model. Transferring the appropriate extension model in practice should be also delivered to clusters of farmers as a way to integrate the effectiveness of agricultural extension for fruit production.

References
Faculty Exchange between Texas Tech University (TTU) and Centre de Formation Fritz Lafontant (CFFL), Haiti.

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**Introduction**

Haiti is the most economically depressed nation in the Western Hemisphere and is home to the second densest population. Although agriculture is an important sector in the overall economy, Haiti does not produce an adequate quantity of food crops and livestock to provide for the population. Between 1980 and 2012, Haiti’s Human Development Index (HDI) rose by 1.8% annually from 0.335 to 0.456, ranking the country 161st out of the 187 countries with comparable data (UNDP, 2013). Haiti’s literacy level remains near 50% with an average for formal education at 4.9 years, mirroring its national educational spending (UNDP, 2013).

An analysis by the World Bank (2013) highlights the relationship between low-income and factors such as poor access to credit, lack of infrastructure, low educational levels, and limited social capital. Birdsall and Londono (1997) stated the World Bank recommended reallocation of social spending to primary education and healthcare as a cost-effective means of providing aid to Haitian populations at risk without significantly increasing the fiscal burden. Policies directed toward this segment of the population, as well as investment in people’s capabilities – through a focus on education, nutrition and health, and employment skills – can expand access to productive employment and provide for sustained progress (UNDP, 2013). Maslow (1943) stated that basic needs, when not satisfied, supersede the later needs in the hierarchy (Lester, 1983). Subsequently, development efforts in Haiti must begin with basic needs such as food security.
How the Program Works/Recommendations

Understanding this concept, the program known as Zanmi Agrikol adopted as its mission to improve the quality of life of people living in rural areas. To fulfill this mission, Zanmi Agrikol has partnered with the Centre de Formation Fritz Lafontant (CFFL) to prevent malnutrition through agriculture, education, and entrepreneurship. CFFL is a community, non-profit vocational school located in Corporant Central Plateau, and offers post-secondary education in agriculture, building construction, and woodworking.

Results to Date/Costs of the Program

CFFL came to the attention of Texas Tech University (TTU) faculty through mutual contacts. TTU faculty and students visited the school for an initial meeting where they toured multiple school farms and facilities and met with school administrators, teachers and students while performing a non-formal needs assessment. This initial contact was followed by the director of the agricultural program at CFFL traveling to TTU in September 2013 to continue conversations about developing a mutually beneficial relationship; a mutual interest was established. A seminar was delivered at TTU in which graduate students and faculty participated. Funds are being raised through current grant writing and student travel fees associated with study abroad courses, but travel costs are the main expense.

The first faculty exchange will initiate from TTU in May, 2014. A study abroad course will be conducted and shared between both institutes giving the opportunity for professional development. As the program grows and develops, formative evaluations will be conducted on a regular basis in order to ensure goals are being met.

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Field Testing of a Maize Singulating Hand Planter: An Example of a Public-Private Partnership Incorporating Indigenous Knowledge into Innovation Feedback Loops

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Keywords: Technology, innovation, participatory, development, public-private partnerships

Introduction

The importance of public – private partnerships in developing sustainable integrated agricultural systems is seen as vital for providing sufficient food for a growing world population (Morrone, 2008; Davis & Heemskerk, 2012). The difficulty is matching technological innovation with appropriate small-holder farming systems within the developing world (Douthwaite, Keatinge, & Park, 2001). Numerous authors have noted the importance of improving corn production in order to improve small-holder producer livelihoods (Ali-Olubandwa, Odera-Wanga, Kathuri, & Shivoga, 2010; Johansen, Haque, Bell, Thierfelder, and Esdaile, 2012). Most improvements that have produced positive gains for small holder farmers production comes from
modifying promising innovations through farmer input and modification (Morrone, 2008). This program provides a model of partnership between a U.S. land-grant institution, a private consulting company, a non-government organization, and a farmer interest group to improve a technology design using innovation feedback loops (Lynam, 2012; Garrety, Robertson, & Badham, 2004).

**How the innovative program works**

This project is an effort to field test the effectiveness of a faculty-student designed hand planter that will reliably plant corn seed with minimum user effort. The intention is that this planter will improve the corn planting methods of farmers and decrease the treated seed to skin contact. An additional benefit is that by changing a plastic drum, the farmer can make fertilizer applications next to the growing corn plant at the optimum time.

A private company was contracted to partner with a non-government organization to field test the hand planter with a corn growing farmer interest group in Thailand. The company provided technical expertise in research design and monitoring and evaluation. The NGO provided staff members to facilitate agricultural research activities and support.

**Results**

The result of the first phase of testing partnership was valuable data for improving planter reliability. A second valuable contribution was the incorporation of farmer viewpoints and integration of a traditional corn planting tip in the design. This indigenous knowledge and experience was used to develop further design improvements.

**Conclusion**

This public-private partnership has demonstrated that innovation feedback loops can be effective in improving technology. The project conclusions confirm the viability of this model for improving agricultural innovation which is vital for creating sustainable agricultural systems. In order to develop healthy public private partnerships in this type of research, it is important for public institution staff to be open to innovation from marginalized small-holder farmers. This speaks to the need for a learning mindset from all involved. It is also important to implement testing with farmer groups that face similar constraints of those the technology is intended to help. Lessons learned indicate the need for long-term relationships be developed between public institutions and organizations that have relationships with small-holder farmer groups (Roseboom, 2012). These enduring relationships between farmers, private organizations, and public institutions should be encouraged which see the small-holder farmer as a co-researcher in this process.

**References**


Gardens that Withstand the Test of Time—Sustainable Traditional and Conventional Extension Projects on Four Native American Reservations in Arizona/New Mexico

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Keywords: Gardening, Native American, sustainable, reservation extension, traditional

Introduction

Historically, gardening is an activity traditionally practiced by many Native American families, as a means for survival for food production, and also for cultural reasons. However, local food production has gradually diminished (Tuttle et al., 2008). Like other cultures affected by modernization, many Native Americans are dependent upon the modern food production system, often distant from consumers. To help re-establish local traditional gardening, reservation extensionists have introduced sustainable gardening projects to address food dependency, especially for low-income families, as well as loss of cultural values. This poster highlights innovative gardening programs as well as challenges to their implementation on four reservations in Arizona and New Mexico.

Innovative Programming/Results

These projects represent different reservations: Hopi, Navajo, San Carlos Apache, and Hualapai, which are distinct in geography, ecology, and culture (Tuttle et al., 2008). The projects include nine schools, one 4-H, and numerous community gardens. Table 1 shows innovations.

Table 1. Innovative Gardening Programming by Reservation

<table>
<thead>
<tr>
<th>Hopi</th>
<th>Navajo</th>
<th>San Carlos Apache</th>
<th>Hualapai</th>
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<tbody>
<tr>
<td>Continuation of</td>
<td>Partnership with many tribal agencies/1994</td>
<td>Partnerships with 2 Alternative High Schools,</td>
<td>GrowLabs--indoor lighting for early planting and hydroponic garden</td>
</tr>
<tr>
<td>traditional planting</td>
<td>colleges to plan gardening programs</td>
<td>Rehabilitation and Detention Ctr.</td>
<td>Recycled tires to plant gardens to retain water</td>
</tr>
<tr>
<td>concepts to augment</td>
<td>Starting small/slowly to achieve buy-in, expand</td>
<td>Drip irrigation, manure/mulch to enrich soils</td>
<td>Worm composting--worm castings as fertilizer</td>
</tr>
<tr>
<td>modernized diet</td>
<td>to larger projects</td>
<td>Revitalization of traditional gardening for</td>
<td></td>
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<tr>
<td>Secondary school</td>
<td>Protection of gardens from livestock by using cattle panel fences</td>
<td>agricultural/cultural uses</td>
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<tr>
<td>greenhouse use to start</td>
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Types of gardens included: vegetable (summer and winter), including hydroponic vegetables, herbs, fruit trees, and flowers. Projects included all school levels. Delivery methods consisted of some classroom sessions, but are mostly hands-on methods, demonstrations, practice, such as cultivating the soil, pruning, planting, and harvesting various crops. Tuttle et al. 2009 also showed that hands-on methods are preferred on reservations. Impacts included: Navajo reservation--effective, efficient growth of many vegetables in a small area via incorporating aged horse manure, and utilizing less water with a drip irrigation system; San Carlos Apache--evaluations showed that youth have learned how to plant, compost, amend, and work the soil, save seeds, grow, and harvest crops, and the majority planned on planting their own gardens; Hualapai—Boys and Girls Club, Headstart preschool, and Detention Center staff are interested in improving their expertise at gardening; Hopi—teachers learned and taught their students horticultural techniques to meet the communities’ goal of ensuring food security for the future.

Conclusions/Recommendations
Extension personnel on these reservations implemented projects to encourage growth of traditional and conventional sustainable gardening, which is vital to their communities’ health, financial well-being, and culture. Schools, Detention Centers, and many communities garden, providing local produce. For example, on the San Carlos Apache Reservation, youth donate squash and melons to Older Adult Centers. However, these projects need increased funding, personnel, and improved techniques to control rodents, insects, pests, and diseases. They require sustained participation from their communities and tribal agencies, which has been lacking. Extension personnel should develop evaluation methods across the reservations.

Costs/Resources
- Hopi--$30,000—UA Native People Technical Assistance Program
- Navajo: $17,000—Navajo Dept. of Agriculture, National Wildlife Federation
- San Carlos Apache: $5000—USDA People’s Garden Grant
- Hualapai: $300,000-Office of Juvenile Justice (OJJDP), funds to Tribe
- All Reservations: The Federally Recognized Tribal Extension program provides extension personnel, as well as operations and travel funds

References
If It’s Broken, Let’s Fix It! A Community Model for International Agricultural Development

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Keywords: Collaboration; Organizational Structures; Poverty Reduction; Public-Private Partnerships, Value Creation

Introduction
Watch the news about U.S. civilian foreign aid and you find lots of opinions, controversies and criticisms. The goals of USAID include a broad range of purposes—disaster relief, poverty relief, technical cooperation, bilateral interests, socioeconomic development and others. “USAID implements funding from 12 foreign assistance accounts totaling $20.4 billion.” (USAID, 2013a, 2013b). Clearly, civilian foreign aid is not “one size fits all.” However, there may be alternative models. This poster identifies, compares and contrasts two models—G2G and C2C.

Conceptual Framework
Friedman (2005) shook us with ideas that the world is flat—and he described ten flatteners that changed our world and three points of convergence. Five megatrends also affect our global future—1) population growth, 2) disruptive innovations, 3) climate change, 4) migration-immigration, and 5) global terrorism. Christensen (2000) posited convergence and a flattening world produce disruptive innovation. Rogers (2003) principles advocated a strategy for adoption. Friedman (2007) recommended exploring new models as the “world starts to move from a primarily vertical—command and control—system for creating value to a more horizontal—connect and collaborate—value-creation model” (p. 233).

How the C2C innovative model works
Development starts “up” from communities—not “down” from Kabul or Washington. In 2009, USG realigned USAID's (2013c) programs to emphasize financial assistance, referring to it as "government-to-government" or "G2G" assistance.” This poster compared and contrasted G2G and a “community-to-community” or “C2C” model based on inputs, sources, transaction costs, corruption, and on-the-ground investments. The simulated G2G model allocated approximately 5-10 percent of funding to on-the-ground project development while the simulated C2C model allocated approximately 50 percent. Ghemawat (2007) argued that the world is not as flat as Friedman says. Ghemawat observed that currently 90 percent of investment transactions are local—C2C-based.
Conclusions/Implications

International agricultural development needs competence more than it needs more cash. A widening gap separates more developed countries from least-developed countries with regard to training and education. Without skilled and knowledgeable people, no country can hope to achieve self-development, self-sufficiency, or self-direction. Leaders must narrow the gap while fostering internal locus of control.

The C2C model continues to explore three key questions—What should be the relationship between public-private entities and communities in which they operate? How do we circumnavigate multiple identities as citizens, consumers, taxpayers, employees, entrepreneurs, and shareholders? Who owns what, particularly land and intellectual property?

Recommendations for practice

Rogers’ (2003) principles and a strategy to improve adoption-diffusion of innovation are crucial. Stakeholders can examine “five attributes: Relative advantage, compatibility, complexity, trialability, and observability” (Rogers, 1983, 206) within community venues. It is essential to design simplicity into the elements. Result and method demonstrations improve adoption rates. A caveat of C2C is to insure better distribution of returns across adopter groups. Community-owned cooperatives offer economic parity. There are no silver bullet solutions—one size does not fit all—but innovation at the community level and the core elements of training and education provide global triage of hunger, poverty, illiteracy, and conflict.

Cost/Resources (for innovative programs)

Modeling Software—($100/electronic charts & database)
Consulting and Community Services—($1,500/ development of instruments)

References


Impact of Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA) on Woman Beneficiaries in Bangalore Rural District of Karnataka State, India

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Key Words: Women beneficiaries, Socio-economic status, MGNREGA

Introduction
The Government of India formulated the Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA), a right-based wage employment program, with a goal to enhance livelihood security and create durable assets in rural areas (Anonymous, 2013).

Studies on the socioeconomic impact of MGNREGA on women beneficiaries have indicated that MGNREGA has generated employment (Jayshree et al, 2010) and contributed to community development (Garg & Yadav, 2010). Studies on women beneficiaries’ attitude towards developmental programs have found favorable to very favorable assessment (Natarajan & Muthaiah, 1995; Manjula & Belli, 1994; Sharma et al, 1988). However, no study has been conducted in Bangalore rural district to assess the socioeconomic impact of the program specifically on women beneficiaries and their attitude towards MGNREGA program.

The overall purpose of study was to assess the impact MGNREGA program on Women beneficiaries. The objectives of the study were to describe the demographic profile of women participants and assess their attitude towards MGNREGA program, and to determine the impact of MGNREGA program on women beneficiaries’ socioeconomic status.

Methodology
The study was conducted in Bangalore rural district of Karnataka state, during 2012-2013. Three Taluks were randomly selected and 120 beneficiaries were selected from those three Taluks through snowball sampling technique. Ex-post facto research design was used for this
study. Beneficiaries’ attitudes towards MGNREGA were measured on five-point Likert scale (1=SD to 5= SA) containing 30 statements (Roy, 2012) with score ranging from minimum of 30 to maximum of 150 with a theoretical midpoint of 90. The socio-economic impacts of MGNREGA were measured using 10 indicators (Trivedi, 1963; Kumar, 2008). The data were collected using a pre-tested interview schedule. The schedule was reviewed by a panel of experts and field tested. The chi-square test was employed to examine the overall impact in terms of socio economic status and their levels: low, medium, and high. Data were analyzed using Minitab software.

Results

One-third of participants were younger (less than 35 years), thirty five percent of participants were non- agricultural laborers and nearly one-half of the participants were illiterate.

The result indicated that 45.0% of the women beneficiaries had a moderate level of attitude towards MGNREGA. On the contrary, 25.8% and 29.2% of the beneficiaries had favorable and unfavorable attitude respectively towards MGNREGA.

Thirty percent of the beneficiaries had low socioeconomic status before the implementation of MGNREGA which was drastically reduced to 5.83% after the program. The chi-square test revealed a significant difference in the socioeconomic status of the beneficiaries before and after the implementation of MGNREGA program. ($\chi^2 = 47.07**$, P<0.01).

Conclusions and Recommendations

Post-MGNREGA implementation differences in women beneficiaries’ annual income, social status, expenditure on food consumption, social participation, education, and material possession had significantly contributed to improving their socioeconomic status. Therefore, the policy makers, administrators and academicians can use these indicators to evaluate other rural development programs/projects. MGNREGA officials should develop a work plan to coordinate work activities taking into consideration peak farming season. Awareness about MGNREGA should be communicated through Extension educators among rural population utilizing various communication media.

References


Kumar, R. & Prasanna, R. (2008). Role of NREGA in providing additional employment for tribals and curtailing migration. NREGA, design, process and impact, Ministry of Rural Development, Govt. of India, 190-195.


Introduction

Like many modernizing communities in the world, Native American communities have experienced increased rates of obesity and overweight populations. Four projects on three reservations aim to decrease the rates of obesity and overweight in their populace. The three reservations are diverse in agriculture, culture, ecology, and geography (Tuttle et al. 2008). Extensionists apply diverse strategies to achieve this goal, which reflect two areas: traditional foods preparation and nutrition education. Three of these projects are integrated with growing crops and gardening, while one is a comprehensive nutrition project.

Innovative Programming/Results

Table 1 shows the traditional food preparation and nutrition education innovations. Hands-on delivery methods, combined with classroom sessions and fieldwork are most successful, similar to Tuttle et al. (2009). Local partners with appropriate cultural and linguistic connections, for instructional help and community acceptance, are important. Hopi and San Carlos Apache programs integrate gardening and nutrition for adults and youth: agricultural, cultural, and spiritual aspects, while Navajo-Shiprock incorporates crop production and nutrition, because some producers cannot prepare value-added crops, and Navajo-Holbrook manifests a comprehensive nutrition program.

Impacts included: Navajo-Shiprock--6 out 7 youth learned about and understood how to prepare blue corn and red berry mush; 30 out of 35 native women learned to use native foods as value added products. Navajo-Holbrook--Pre/Post Surveys of K-5 indicated an increase in scores from 63% to 88% knowledge of MyPyramid food guide; Pre/Post Surveys of K-5 indicated increased scores from 63% to 84% knowledge of the nutritional value of fruits/vegetables, and one evaluation indicated that while only 14% of adults prepared fruits/vegetables as a snack initially, 70% did after the workshop, Hopi---Traditional Foods Workshop participants used the Traditional Hopi Cookbook to help communities reconnect to their traditional foodways.

Conclusions/Recommendations

Remote locations in “food deserts” with no grocery stores, harvest schedules that conflict with school schedules, inadequate personnel, lack of participant transportation, and short term grant funding are challenges these extension agents face. While programs demonstrate initial
success, further funding, more personnel, and sustained participation are necessary, as well as more help from each community.

Table 1. Traditional food preparation and nutrition education innovations and examples

<table>
<thead>
<tr>
<th>Hopi</th>
<th>Navajo-Shiprock</th>
<th>San Carlos Apache</th>
<th>Navajo-Holbrook</th>
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</thead>
<tbody>
<tr>
<td>Research-perceptions of Hopi women about traditional foods: allows for transfer of customs, is part of being Hopi, has spiritual meaning, is used for ceremonies, uses ancestral language, identifies Hopi womanhood. Healthy Hopi Recipes Cookbook—1400 copies available to distribute at Cookbook workshops after participant evaluations. Partners are Hopi Special Diabetes Program; Community Health Service</td>
<td>Traditional foods with value-added processing: demonstrations for crop producers increase income and improve nutrition. Navajo Cake is used in ceremonies, such as the puberty ceremony for girls. Five recipes are prepared with active participation from small to large groups for youth and adults. Folks flock to purchase processed steamed corn.</td>
<td>Partners: Two Alternative High Schools, Rehabilitation/ Detention Center, Boys and Girls Club, tribal Diabetes Prevention Nutrition Educator to instruct nutrition/foods classes. Adapts Junior Master Gardener Nutrition curriculum to secondary school level Apaches. Smaller group sizes give extension personnel more engagement with youth.</td>
<td>Employs Eating Right is Basic curriculum with the Extension Food and Nutrition Program (EFNEP), employing delivery strategies unique to Native Americans and Navajo Tribe. Uses effective pre-post evaluations: Pre-post surveys not often used on reservations, due to cultural characteristics, but these extension surveys worked well.</td>
</tr>
</tbody>
</table>

Costs/ Resources

- Hopi-$30,000—UA Native Peoples Technical Assistance Program
- Navajo-Shiprock—$28,840-Risk Management Education Agency
- San Carlos Apache: $5000–USDA People’s Garden Grant
- Navajo-Holbrook-$145,00 Arizona Nutrition Network and Department of Health
- Hopi, Navajo-Shiprock, San Carlos Apache: The Federally Recognized Tribal Extension program provides extension personnel, as well as operations and travel funds
- Navajo-Holbrook extensionist is a County Extension Director, UA provides some personnel funds

References

Influence of Country of Birth on Faculty Participation in International Development Work

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Keywords: Motivation, International, Profile, Characteristics, Development

Introduction/Need for Research
The participation of faculty in providing technical expertise to local and international clients is part and parcel of the land-grant mission. The diversity of faculty members in various universities makes for a good case of what provides for greater motivation in involvement in international development activities. A greater understanding of their inclination could reshape and reframe the human component of the organization.

This study attempted to evaluate the motivating factors affecting the interest and participation of U.S. and non-U.S. born faculty in international development activities. This is important from an organizational standpoint to maximize the contributions of each faculty member in international development undertakings.

Methodology and Conceptual/Theoretical Framework
This study used questionnaires to survey the faculty respondents. A scoring Likert scale was utilized to obtain the origin of motivation while a bipolar adjective scale was used to describe the personal characteristic profile of the respondents. Data collected were analyzed using SPSS software. Both descriptive (frequencies, percentages, means, standard deviations) and inferential (T-tests) analyses were conducted.

The humanistic theory of motivation was the base theoretical framework in this study. It is a fact that behavior arises directly from underlying source of motivation and it is possible to assess the origin of motivational factors which influence behavior.

Results
U.S.-born respondents were motivated by: the importance of international work; humanitarian service; curiosity in seeing other parts of the world; and, interest in the problems
of developing countries. Non-U.S. born respondents looked at *additional income* as a motivation in participation in international development work.

The ANOVA on the 23 original sources of motivation by country of birth showed statistical differences on five items. From the mean scores of the 25 personal characteristics, four had significant differences between the U.S.-born respondents and non-U.S. born respondents: *cosmopolitan, social, sense of humor, and humanitarian*. U.S.-born faculty had closer inkling on the positive personal characteristics than the non-U.S. did.

Also, results revealed that with available funding, greater participation in international development activity is expected.

**Conclusions/Implications**

The results of the study provided a strong suggestion of the differences in motivation of U.S. and non-U.S. born faculty in participating in international development activities. This variation can be attributed to some significant differences in their personal characteristics profile. U.S. - born faculty had closer inkling on the positive personal characteristic than the non-U.S. born faculty. The strong mandate for an affirmative action faculty membership require for a deeper understanding of the individual motivations that can make for a more successful international program work.

Understanding the motivating factors that influence the interests of U.S. and non-U.S born faculty is important in future organizational planning that involves participation in international development work. This becomes especially true in light of the current internationalization and globalization efforts being put in place in various agricultural universities.

**Recommendations**

Agricultural leaders must consider the individual motivation of the faculty members in order to maximize their potential accomplishments. Funding and international participation opportunities need to be made available for faculty regardless of the country of birth.

**References**


Innovation Platforms and Technology Diffusion in Malawi

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Key Words: Innovation platform, technology diffusion, agricultural extension, Malawi

Introduction

The concept of Innovation Platforms is increasingly gaining recognition and importance as a major pathway for enhancing technology transfer among agriculture stakeholders in Africa. The concept originates from the innovation systems approach, which evolved in the late 90s. Unlike other earlier technology transfer approaches, Innovation Platforms takes into account the roles of various stakeholders in the farming system. In Malawi, the concept is being used by both public and private agricultural extension service providers to articulate farmers’ demands and harmonize implementation of extension programs. An Innovation Platform can be defined as a forum established to foster interaction among a group of relevant stakeholders and collaborators around a shared interest which could be sharing of information, promotion of a technology or an innovation. Depending on need, Innovation Platforms can be set up at national, district and local level.

Study Objectives

The study aimed at evaluating how Innovation Platforms facilitate technology transfer and adoption of technologies among smallholder farmers, draw experiences from practical implementation to share how the approach is contributing to foster dissemination of agriculture extension messages, among stakeholders and also evaluated the constraints and limitations faced during implementation.

Methodology

The study used quantitative methods to collect data from farmers and stakeholders who are members of the Platforms. 120 farmers and 40 stakeholder’ representatives from four sampled districts in Malawi were administered with a semi structured survey. The survey contained Likert-type and multiple answer type of questions relating to respondents opinions on the effectiveness of the platforms in addressing their needs, objectives and impact on their farming systems. The data was analyzed using SPSS and multiple responses frequencies were run to determine the impact of the platforms on the farmer’s agricultural systems.

Results and Findings

70.7% of the farmers experienced a great improvement in the access to improved seeds after becoming members of an Innovation Platform. The results also showed that there was a
general increase in farmers’ access to improved seeds, information on new farming technologies and improved support from extension workers with mean values of 4.6, 4.3 and 4.4 respectively. The opinions were rated on Likert scale with 1= decreased greatly, 2= decreased slightly, 3= stayed the same, 4= increased slightly and 5, increased greatly. The results also indicated that Innovation Platforms need improvement on their activities to improve access to markets as the mean scores for improved access to markets and agricultural credits were 3.7. On the overall impact of innovation platform in addressing farmer’s needs, 43.1% of the respondents indicated that their needs were addressed by being part of the platforms.

**Conclusion and Recommendations**

Innovation Platforms have been shown to have a positive impact on improving access to improved seed varieties, information on new technologies and support from extension workers. However there is need for an improvement in the activities that relate to agricultural credit and access to markets. These results however are only preliminary as the data analysis of the study especially on data from stakeholder is still underway.

**References**


International Student Internships Provide Real-world Extension, Higher Learning and Employment Opportunities

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Introduction
Located in Costa Rica, Central America, EARTH University has a diverse student body originating from Central and South America, the Caribbean, Europe and Africa. In the fall of 2002 and 2008-12, six third year students participated in an internship with UF/IFAS Gadsden County Extension in Quincy, Florida. The internships were under the guidance and supervision of the county extension faculty and the district extension director.

How the innovative program works
The internship program matched the student interns’ professional and personal internship objectives with a project of their choice. Project assignments with professional goals in mind included extension outreach, agricultural waste mitigation and agricultural production systems. Personal objectives centered on the exchange of farming and production practice methods and ideas. In August 2012, a survey instrument was emailed to past interns to assess their internship experience and to determine if it had influenced their higher education interest and employment marketability.

Results
Five past interns responded to the survey, two from Belize and the others from Brazil, Costa Rica and Venezuela. All indicated that their professional and personal objective expectations were met. A part of the internship experience included a community service component that was fulfilled by volunteering in the community via evening language classes at
local churches with youth and adults. The interns reported 203 community service contacts. Intern extension clientele contacts documented 77 farm visits, 11 trainings, 17 workshops, and 16 field days. For the higher education interest section of the survey, one of five responding was attending graduate school and the remaining four said that the internship experience had influenced their continuing education interest. Lastly, the internship experience helped illustrate career opportunities in agriculture. Three interns indicated that they were employed full-time, one as a citrus agronomist, another as an agricultural instructor and one in training at a sugarcane operation. The interns indicated that their internship experience increased their employment marketability in such areas as greenhouse crop production, water quality, plant diseases, and nutrient management.

Conclusions/Implications
When asked, “What did you value the most about your internship experience?” all indicated: working in the community, working with extension personnel, hands-on research applications, and access to university experts in field of interest. Overall, the interns indicated that they were very satisfied (40%) to extremely satisfied (60%) with the guidance and supervision of the extension office faculty and staff. Likewise, 20% and 80% of the interns ranked the guidance and supervision of the district extension director as very satisfied and extremely satisfied respectively. The internship experience not only exposed the student interns to the county extension occupational experience but also to the scientific process through investigative projects that illustrated the connection between research and extension.

Cost/Resources
EARTH University seeks to provide internship opportunities for students to apply academic studies knowledge gained in a practical workplace environment. The cost of the EARTH/UF internship was supported by an $8,000.00 student stipend, housing, and workplace assignment by the sponsoring University with travel and related expenses paid by the student in cooperation with EARTH University.

References

Leadership Development as a Catalyst for Youth-Directed Participation in Agriculture and Natural Resources in the Caribbean and Sub-Saharan Africa

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Key words: Youth Leadership Development, agriculture, natural resources, Sub-Saharan African, Caribbean

Introduction
Youth in Sub-Saharan Africa and the Caribbean are faced with a myriad of development challenges associated with poverty, poor governance, unemployment, food insecurity, urban migration, limited public healthcare, and environmental degradation. Youth aged 10-19 account for approximately 25% of the population in these regions (UNICEF, 2012). Consequently, it is essential that young people be engaged in the development of their communities and take-on leadership and entrepreneurial roles to address these challenges with innovative solutions.

Critical Mass Leadership Education (BoldLeaders) is a Denver-based NGO working to increase the participation and engagement of marginalized groups, especially young people, in community governance. BoldLeaders (2011) programs are critical examinations into the linkages of leadership and civic engagement to socio-ecological dilemmas such as food insecurity, community health, economic vitality, conflict resolution, entrepreneurship, and the environment. Programs are delivered through U.S.-based exchanges that are supported with follow-up training in participant home countries. Youth participants develop and implement action-oriented projects upon return to their home communities using vital relationships with previously identified local organizations as their foundation and support. Using a common website platform, along with local teams and networks that they developed, the new ambassadors maintain contact with their peers and BoldLeaders facilitators – sharing the challenges and successes of their projects.

Methods
The study’s purpose is to share results of a practitioner analysis of youth leadership projects implemented after participation in BoldLeaders training. Project reports were collected from youth that participated in Sub-Saharan Africa Youth Leadership or Youth Ambassadors with the Caribbean programs from 2007-2013. An online survey tool with mobile device accessibility was used in conjunction with electronic mail to collect data. Youth reports came from eleven countries: Kenya, Nigeria, South Africa, Tanzania, Uganda, Bahamas, Grenada, Guyana, Jamaica, Suriname, and Trinidad and Tobago. The constant comparative method was utilized to conduct a thematic analysis of youth projects (Lincoln & Guba, 1985).

Conclusions and Implications
The preliminary findings demonstrate the importance of youth leadership and civic engagement training as a catalyst for youth-directed involvement in agriculture and natural
resources in the Caribbean and Sub-Saharan Africa. BoldLeaders participant projects may be
categorized into two areas: food security and the environment. Projects related to food security
include: (a) school gardens, (b) community gardens, (b) poultry and livestock projects, (c) meal
preparation infrastructure (stoves, kitchens), and (d) income generation including microcredit
initiatives. Projects related to the environment include: (a) access to improved water, (b)
sanitation, (c) litter clean up, and (d) municipal waste management including policy work.
Additionally, results of the study indicate youth perceptions of agriculture as a viable livelihood
choice, which could increase youth employment, contribute to improved food access and
nutrition, and reduce trends of rural-urban migration (Boxill & Quarless, 2005; FAO & ILO,
2013).

Resources
BoldLeaders programs are with support from the Bureau of Educational and Cultural Affairs of
the U.S. Department of State and U.S. Embassies in the participating countries.

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Introduction
The World Bank website indicates that primary schools on the island of Grenada depend largely on state funding to provide school supplies ("World Bank," 2006). Given the current financial constraints of governments, many schools begin the school year short of these supplies. Consequently, schools develop strategies to acquire funds for this purpose. Yet such strategies are unable to meet the schools' demands. This poster presents the success of a school gardening project at St. Michael’s R.C. School as a strategy to provide extra funds.

School gardening is promoted as an opportunity for the teaching and learning of agricultural farming techniques; Muehlhoft and Boutriff (2010) state that these projects provide an opportunity to contribute to school feeding programmes as well as to encourage sustainability of agriculture. Additionally Bergsere (2012) postulated that students learn how to be responsible and how to work as a team. The innovation at St. Michael’s R.C. has assisted in helping the school to become financially sustainable.

How the Innovative Programme Works
The innovation cultivates school lands with short term crops, rears broilers and establishes a spice garden for long term income. The spice garden consists of the following spices: nutmeg, pimento, bay - leaf, clove, black pepper, vanilla and cinnamon.

Parents, community members, staff, and students of the school are engaged in land preparation and planting. The school collaborated with a national agricultural farm school system to obtain a steady supply of labour. Parents and community members visited the school on afternoons; each teacher visited the gardens with their students for at least one class per week and the students from the national agricultural farm school were stationed at the school during their practicum.

The school supplied meat (chicken) and vegetables to school feeding programmes in three urban schools as well as its own school feeding programme, to two supermarkets and to the community.
Results
Proceeds from the sale of the products were used to purchase school supplies which included a photocopying machine and books for the school’s library. Some of the funds were also used to reinvest in agricultural inputs to maintain continuity. The project is in its early stages hence the benefits from the spice garden are yet to be realized.

Implications
The school has the potential to be financially independent for the acquisition of fixed and consumable supplies. It also introduces primary school and tertiary level students to practical agriculture. It fosters community fellowship. It gives the school an opportunity to engage the community in school management.

Recommendations
• A longitudinal study is needed to determine whether such a project can eventually lead to financial independence and sustainability.
• This model could be used in rural schools with adequate land space
• This model could help teach practical agriculture to visiting students from other schools.
• This model has potential for school feeding programmes

Resources
• Labour (community members, parents, farm school students, labourers from government farm labour programme).
• Land (School lands)
• Initial capital (donations and government assistance)
• Inputs for crop production and spice garden (seeds, seedlings, spice plants, sprinklers.)
• Inputs for Poultry production (wire, cement, board, feeders, plucking machine etc)

References
Partnering Across Borders: International Collaboration in Student-centered Course Design

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Introduction

It has long been said that today’s college graduates need to be prepared to work in an increasingly global society (Snyder, Lamm, Brendemuhl, Irani, Roberts, Rodriquez, & Navarro, 2011). One important way for undergraduate students to develop a global perspective is through exposure to other cultures in formal and non-formal educational situations. However, global exposure using only teacher-centered approaches (i.e. lecture) isn’t the most effective way to encourage a paradigm-shift among students; student-centered, experiential learning allows students to take charge of the environment, while also being encouraged to reflect upon and internalize aspects of another culture (Hains & Smith, 2012). This poster focuses on how to use student-centered experiential education and collaboration with international audiences to challenge students within the global sphere.

How the Innovative Program Works

This program was operationalized through an undergraduate course titled Entrepreneurial Approaches to Community-based Education. A primary component of this course was student interaction within both domestic and international case studies. Specifically, students developed a proposal that impacted a local community of interest – which encouraged them to apply the skills and knowledge (i.e. community-based education, evaluation, program development, asset allocation, etc.) learned throughout the course. Development was encouraged through creative and entrepreneurial activities designed by course instructors, but directed by the students. A final layer of the experience was the international interface students experienced with other students from Acadia University in Nova Scotia (NS). Throughout the experience, domestic students discussed global issues with NS students, worked on projects and came together to share project results. Each of these projects was designed to tie the entire experiential education process together, within a global context.
Results

Research tells us that student interaction with other students across cultures makes for a more meaningful and impactful experience (Leask, 2009). The fifteen students who enrolled in the Entrepreneurial Approaches to Community-based Education course not only learned valuable community-based education skills, but also developed intercultural competencies and appreciation through the experience. In addition, the ability to be directive of their own education (as part of the student-centered learning) gave them ownership of the process, which developed other critical thinking skills.

Conclusions/Implications & Recommendations for Practice

The salience of internationalizing student educational experiences cannot be overstated. Truly internationalized curriculum is characterized by the “…intercultural learning through authentic experiences of intercultural interaction.” (Montgomery, 2009, p. 259). Collaborating with universities and communities in other countries is an excellent way to do this.

However, using the traditional instructor-centered model isn’t going to work. Whether you are a teacher in the formal classroom, or doing Extension or community-based education outside of the classroom, the need to creatively diversify programming is real. Programmatically, while this course will continue to be an undergraduate course, developing a deeper, immersive international study experience to dovetail with this program, or possibly tweaking this program into an experience that Extension educators can engage in would all be beneficial. Any of these activities would encourage participants’ personal cultural competence development, as well as diversification of professional programming.

References


Planning for Integrated Agricultural Development Systems for Sustainable Production in Cambodia

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Key Words: Stakeholder perspectives, extension service, needs

Introduction
Cambodia is highly dependent on agriculture as this sector contributes about 28% of country’s GDP and provides employment for about 70% of total labor force. Despite its abundance of unused arable land, it is unlikely at the right moment that cultivated land area can be further expanded due to several challenges being faced by farmers. That is the reason why many documents appearing in Cambodian government’s agricultural strategies and policies prioritize the importance of improving agricultural yields through intensification such as fertilizer uses, irrigation, and adoption of improved varieties. To achieve this, one of the prioritized agricultural strategies of Cambodian government is to promote agricultural extension services provided by both public and private sectors as the government believes that doing so can improve household food security and livelihood of farmers.

How the innovation works
The overarching goal of this study was to seek stakeholder’s perspectives on integrated agricultural development systems that provide input for the development of new agricultural extension policies. A nation-wide survey was conducted to solicit opinions and perspectives of Commune Council Chairs, NGO officials and extension professionals at district and commune level. Data about major barriers to agricultural development, farmers’ knowledge of using agricultural inputs, provisions of agricultural extension services, and how these problems can be solved were collected using structured interview scheduled during May-June 2013 from 143 individuals: 27 extension professionals, 30 NGO staff, and 83 Commune Council Chairpersons.

Results
Findings indicated that agricultural extension services in Cambodia were offered primarily by Ministry of Agriculture, Forestry, and Fisheries and secondarily by NGOs and donor-funded projects. Those extension agents usually met farmers once between one to six months and helped farmers mainly by providing trainings, accompanied by other activities such as group meeting, demonstration, farm exhibition, and farmers’ field days. However, there were
still many problems associated with new agricultural services and provisions for farmers such as the low adoption of improved variety of rice seed for both dry and wet season. Those problems included timeliness of input supply, local accessibility, quality, and costs; and training on use of those inputs. Most respondents agreed that provision of extension services was the top priority to improve food security, and provision of agricultural marketing and irrigation services was the second one. In addition, most respondents suggested that enhancing farmers’ access to agricultural credits and timely availability of fertilizers was the main determinant of agricultural production growth. Getting loans to purchase fertilizer and seeds was still a major problem because lenders wanted collateral, while many of farmers did not have one. Respondents felt that marketing of agricultural products is a major challenge. Farmers marketed their products not primarily to direct consumers, but to traders and middlemen who, in many cases, arbitrarily set the price. To improve the marketing services for farmers, they suggested extension service to find market for them.

**Implications and Conclusions**

Findings imply that agricultural development services in Cambodia are facing several problems including those related to input acquisition and marketing, especially for small-scale farmers, despite the fact that many projects and NGOs are involved in the provision of those services. As immediate action, agricultural extension may need to integrate its services with irrigation, agricultural research, input supply, credit and marketing agencies to increase the adoption of improved rice seeds for both dry and wet season. Training on use of inputs and improved farming techniques is also crucial for increasing agricultural production as a whole because majority of farmers are still using traditional techniques with usage of fertilizers at significantly low rate.

**References**


Introduction

Small farmers in south Trinidad are faced with several operational problems including high cost of input supplies, labor shortage, poor agricultural infrastructure, plant diseases and inadequate extension services etc. A study conducted by Fadiji & Atala (2009) measured the relationship between socio-economic characteristics of farmers and the utilization of agricultural extension information and concluded that age, level of education and farm size showed positive and significant relationships. Whereas Ani, Ogunnika and Ifah (2004) identified that only the educational variable had a significant relationship with technology adoption in Agriculture. Hossain (2011) recognized that experience in potato production, training experience and extension media contact had negative significant relationship with the problems farmers faced. This research intends to examine the relationship between the characteristics of the farmers and the problem which they experience.

Research methodology and theoretical framework

The sample population (N) for this study was 100 farmers. The SPSS V.18 software program was used to perform the statistical test of the analysis of Variance (ANOVA), in order to determine if there were any significant relationships between the characteristics of the farmers and the problems in which they may be experiencing. From the test a significant value (P) was derived and depending on it value, would determine if there were any relationships. If P <0.05 this indicated a level of significance and for a P>0.05 this indicated no significance between variables.

Results and Conclusions

This research shows that of the 14 independent variables tested, 6 were significant. Age of the farmers had a significant relationship with the problems encountered. Between ages 35 to 49 the farmers experienced fewer problems and throughout the ages 20 to 34 those farmers experienced the most problems. The location of the farms also had a significant relationship with the problems. The greatest problems were experienced by farmers located in south central region and the least in south east. Employment on the farm indicated significance also with the problems farmers experienced. Rashid and Alma (2010) indicate that farmers without any employed staff experienced greater problems rather than farmers with staff.
The status of how they occupied the land showed significant relationship. It can be seen also that the problem is greatest for those farmers who squat lands as compared to those who lease lands. For those farmers who owned lands experienced least problems. Farmers who grew vegetable crops had more problems as opposed to those who grew tree crops.

**Recommendations**

- A national survey should be executed to determine the main problems affecting farmers in Trinidad and Tobago and develop a ranking order for them as well.
- Support services for farmers need to be properly implemented to give advice in how best the farmers can cope with their problems.
- It should be recognized that farmers exhibiting certain characteristics work best in particular conditions as opposed to others, therefore various strategies should be geared towards specific groups.

**References**


Sharing Knowledge and Exchanging Cultural Understanding: Experiences of a Thai Doctoral Cohort in Oklahoma

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Keywords: institutional collaboration; internationalization; Thailand

Introduction/Need for Innovation
Expanding cultural awareness of students through study abroad programs is a booming trend worldwide (Lewin, 2008). Often these experiences elicit a cognitive awakening in students by expanding their international awareness and cultural competence (Irani, Place, & Friedel, 2006). Roberts (2006) posited, “. . . as different learning experiences occur, it is reasonable to presume students construct meaning from their respective experiences . . .” (p. 112). Universities understand the value of these experiences and have made internationalizing their students a priority (Bruening & Frick, 2004; Ellingboe, 1998; Navarro & Edwards, 2008).

A goal of many institutions is to produce graduates who have a “. . . world-mindedness and who [are] perfectly suited to live and work in different places on the globe as . . . socially responsible and interculturally knowledgeable citizen[s]” (Schuerholz-Lehr, 2007, p. 181). This program’s aim was to deliver an international experience for Thai doctoral students emphasizing Oklahoma’s and Oklahoma State University’s history, agricultural innovations and research contributions while creating opportunities for interaction with U.S. students and faculty.

How the Program Works(ed)
This program resulted from a partnership forged by Oklahoma State University with Chiang Mai University in Thailand. The primary focus was to immerse three Thai doctoral students into U.S. culture while they participated in short-term study. The students honed their research capabilities through a quantitative research methods course, which was intended to benefit them as they complete dissertations and seek to publish their work.

The four week experience was divided into two distinct segments. The first week was dedicated to experiencing Oklahoma through unique destinations. The Thai students were exposed to many historical sites and several Oklahoma State University research stations to
obtain a better understanding of the Oklahoma’s historical roots, as well as the university’s commitment to research and innovation. The remaining three weeks were divided between the research methods course and additional cultural events. Although the program was designed to create a valuable educational experience for the Thai students, Oklahoma State University graduate students also had multiple opportunities to interact with the visitors.

**Selected Results/Conclusions**

One Thai student stated: “This was my first time to America, I am very grateful to further understand your culture. I have used the experiences I obtained while there to further my research [in agricultural extension]. Because of Oklahoma State University’s information, I now have direction towards really making an impact here in Thailand.”

Another student expanded: “I now know how far your state has come to be a leader in research. I want to help my country reach this level.” The interactions led to valuable intercultural learning opportunities for both groups. Testimonies and emergent themes will be conveyed through the poster’s presentation.

**Recommendations/Application**

U.S. universities should build relationships with international institutions to explore opportunities to increase students’ experiences and understanding of different cultures and agricultural systems. U.S. universities should also continually look for opportunities to collaborate on research projects with institutions abroad to assist in internationalizing students from both (Bruening & Frick, 2004).

**References**


Shedding Light on the Poultry Industry in Haiti

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Introduction and need for the innovation

Natural disasters in recent years have severely damaged the fragile food production infrastructure of Haiti. Efforts continue to promote the adoption of contemporary practices to encourage sustainable agriculture. Cultural perspectives in the island country also provide unique challenges to ‘Westernization’ and modernization of poultry production practices. Niche market opportunities exist for eggs that are rejected by traditional US markets and consumer tastes. Blood spot and other reject eggs have value in Haitian culture. Adopting the practice of candling eggs for interior quality would allow producers to separate food-quality eggs from others, and provide an income source unique to Haitian consumers that would be lost in U.S. markets.

How the innovation works and conceptual framework

Incorporating egg candling and understand the implications of the innovation were measured by a short objective assessment. Haitian secondary school students were introduced to the concept of candling eggs through a lesson and demonstration. Nationally-recognized poultry curriculum materials were utilized (Instructional Materials Service, 2011). The materials were locally translated into Haitian Creole, and an interpreter assisted in lesson delivery and assessment.

A pre-test/posttest design was employed. The instrument was reviewed for content and face validity by poultry science faculty, industry representatives, and curriculum specialists. The instrument consisted of four questions; numbers one and four were short response, two was a true-false response, and three utilized a matching battery of seven queries and answers, for a total of ten possible responses.

Introducing the innovation of grading eggs for interior quality in this manner allowed potential producers the opportunity to master the concepts and techniques individually as they gain exposure to the advantages of the innovation. Incorporating the concept of trialability, aligned to the communications channels aspect of the innovation, improves the likelihood of adoption (Rogers, 2003).
### Results
A statistical analysis of the student assessments (n = 23) was conducted using SPSS, producing a Cronbach’s alpha score of .657, and indicating a moderate level of internal consistency.

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<th>Assessment</th>
<th>Minimum</th>
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<td>4.78</td>
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<tr>
<td>Posttest</td>
<td>3.00</td>
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### Conclusions / implications
Successfully adopting egg candling allows small scale Haitian poultry producers to realize a greater level of income by allowing the sale of varying grades of eggs and the sale of a greater total number of eggs to a wider market.

### Recommendations for practice and research
Countries needing to develop the local economy and provide greater options for small holders should incorporate poultry management practices that can be demonstrated, easily adopted in homes, and do not require a large equipment investment. Grading eggs for interior quality is a value-added practice that offers increased income, greater product utilization, and minimal investment for Haitians in the poultry industry.

### Cost / Resources
After the concepts of interior egg quality are introduced, battery-powered egg candlers can be purchased for approximately $35.00 each. Charts and testing materials can be copied for approximately seven cents per page.

### References
Snakebite - An Occupational Disease for Agricultural Workers: 
Development of a Prevention Strategy Using a Media Campaign

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Introduction

In rural areas of tropical developing countries, snakebite envenoming is an important, yet not widely recognized, public health problem. Worldwide, there are an estimated five million bites each year resulting in approximately 400,000 amputations, and between 20,000 and 125,000 deaths (Williams et al., 2010). In 2009, the World Health Organization added snakebite to its list of neglected tropical diseases. No other disease is so closely aligned with rural environments and agricultural occupations (Williams et al., 2010). In tropical countries, snakebite is a disease that can affect food production (Warrell, 2010).

Conceptual Framework

To reduce snakebite occurrence, studies suggest that education to reduce the risk of snakebite is a more plausible approach than plans to eradicate venomous snakes. Preventive efforts should be directed toward educating communities about reducing risk of contact with snakes through an understanding of snakes’ behavior (Warrell, 2010). We propose using mass media to diffuse educational information about snakebite prevention. Media teaches new forms of behavior and creates motivators for action. Media can serve as originating, as well as reinforcing influences (Bandura, 2001).
**Recommendations for Research**

We will use a one-group pretest-posttest design to measure the effectiveness of a media campaign educating rural communities about snakebite prevention. We will randomly select a sample of rural community members and conduct a survey about their experiences with snakes, snakebite, and snake behavior. Post survey, we will host a six-month media campaign with targeted radio public service announcements and printed fliers about snakebite prevention. After the media campaign, we will resurvey the respondents to assess the number and circumstances of snakebites since the introduction of the media campaign. The research would ultimately reflect whether the media campaign might have contributed to a reduction in the number of snakebites.

**Conclusions/Implications**

Development of a snakebite prevention strategy using mass media should be a priority for clinicians, policy makers, extension services, and communications specialists. The thrust of the prevention strategy should be educating communities about reducing risk of contact with snakes to avoid snakebite. Fewer snakebite accidents will result in a reduction of disabilities and deaths, and improvements in agricultural and environmental sustainability.

**References**


Student Perceptions of Fertilizers in Regards to Food Security: Comparing Views of Students from Honduras and the United States

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Introduction/Theoretical Framework

Fertilizers play an important role in food security for Honduras. It is crucial that students from Honduras and the United States have knowledge of fertilizers, their uses, and the ability to improve food security with the proper use of fertilizers. It is also vital that students think internationally, which goal five of the [State] University Strategic Plan encourages, “enhance local and global engagement through focused strategic partnerships” ([State] University Strategic Plan, p. 13).

Borlaug and Dowswell wrote, “These inordinately low levels of fertilizer use have contributed to the massive nutrient depletion that has occurred in almost every country” (Borlaug & Dowswell, 2003, p. 6) which shows the value fertilizers have in creating a stable food source. Effective fertilizer management has been documented as a profitable margin for limited farmers in Honduras and Nicaragua. Thus, it is important to have these types of conversations with students who may think on the contrary of this research (Cahill et al., 2007).

Purpose and Research Methodology

Limited research is available on student perceptions of fertilizer use in Honduras as well as with comparing views of fertilizers with students from the United States and Honduras. Therefore, this study was conducted; students in North Carolina, Indiana, and Honduras were surveyed to understand student knowledge and perceptions of fertilizer use. This study sought to understand student knowledge of fertilizers and their uses, describe the students’ views of fertilizer use in regards to food security in Honduras, and compare the views of students from Honduras and the United States.

University students were shown a video about how fertilizers were made and then were given a short presentation about the other country, America or Honduras. Students were given a survey to evaluate their social networking activities, knowledge and curiosity generated from the video, and students’ perceptions on the role of fertilizer use in Honduras. Results were qualitatively analyzed to look at themes.
Results

Three main themes emerged when students were asked to discuss what they learned from the video and what concerns they had after watching it: social issues, economics, and chemistry of fertilizers. Students from America and Honduras had similar comments about phosphate, the chemical makeup of fertilizers, and composting and some differing views on the cost of fertilizers and social aspects. Ninety-five percent of students reported they believe fertilizers could play a large role in increasing food security in Honduras.

Conclusions and Recommendations

It can be concluded that students from the United States and Honduras are intrigued by the origin of phosphate, its use in fertilizers, fertilizer composition, and composting. It can also be concluded that participants’ believe fertilizers will increase food security in Honduras if they’re properly used. Further research should be conducted to follow up with this population of students and see if the video had a positive impact on them, if students have a greater interest in improving food security, and to examine whether or not these students have used the knowledge learned to improve food security in some way.

References

Student Reflections: Communicating with Guests Lecturers from Costa Rica through Skype to Learn about Social Class and Food Security

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Introduction
Reflective observations are structured exercises designed to analyze connections between the classroom content and preconceptions of the perceived activity or the relationship to that of others (Rhoads, 1997). Experimental learning is a powerful way to address individual growth and potential, which is commonly a much neglected approach to teaching and developing people of all ages (Kohls, 1984). The objective of this experiment was to expose students enrolled in a course based on food security to experimental learning activities and capture student impact through reflective observations.

Methodology and Theoretical Framework
The professor of the course selected two families of different social classes to participate in the students’ experiential learning lab to talk about their livehoods and families. The first Skype visit was with a middle class family that produces their own food and raises dairy cattle. The second Skype visit was with a lower class family where the main household supporter works as a pineapple security guard. Prior knowledge of the two social classes was not provided to the students. The students created questions to ask the two families prior to the activity. At the end of the Skype sessions they reflected on what they learned from the experiences and how this compared to their thoughts before the experiential learning lab occurred. Twenty-eight students of undecided participated. Students’ reflective themes were qualitatively analyzed encompassing the premises of research methodologists, Guba and Lincoln (1989).

Results
The major themes which emerged from the students’ reflections data collection included; importance of family support (76%), importance of food and agriculture to the international families (72%), and how surprising yet positive experience it was for the students (96%); as one student expressed, “It is eye opening to see how other people live in such poor situations”. The term family was stated 31 times within the reflections students commented, “how much more important family is in Costa Rica than the U.S.” Students stated that they did not expect the families to be happy with their lifestyles based on their economic downturns (60%); one student expressed, “I expected them to be poor, in dirt homes, and unhappy. I was very wrong though. They seemed to be kind, loving people, who were happy with their lives and situations”. Students enjoyed learning about the daily lives and culture of the Costa Ricans (44%) and some students (32%) couldn’t believe there was a need for a pineapple security guard.

Conclusion

This reflective observation and experiential learning course not only addresses the two main course objectives but also focuses on the fifth objective in the AIAEE Constitution; Article II section 5. Through reflective observations/writings of the Skype interactions students gained an understanding of another culture, social class, family structures, and food security/agriculture along with an appreciation for the experience. Overall, this course will continue to educate and impact students from all departments about global food security.

Reference


Sugar Cane Extension Model: A Case of Thailand

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Keywords: Sugar Cane, Extension Model, Thailand

Introduction
Sugar cane is an important economic crop of Thailand with a total acreage of 3.29 million acres. There are 47 sugar factories in the country with a combined production of 97.98 million tons in the 2011/2012 harvest year (www.ocsb.go.th). There are still problems with uncertain yields and productivity. It is important to study the extension model to increase productivity.

Objectives
The objectives of this study are: 1) To study the fundamental characteristics of sugar cane farmers, 2) To study the state of sugar cane production extension by the government and private sectors, and 3) To develop a sugar cane extension model.

Method and Data Sources
This is a research and development study using mixed methods. There is total population of 4,534 farmers who supply sugar canes to sugar cane mills. Multi-stage sampling were used to select a sample population of 901. The sample consisted of 320 people from large-sized sugar mills, 240 from medium-sized sugar mills, and 341 from small mills; and for the farmers, the sample consisted of 235 large-scale farmers, 158 medium-scale farmers and 508 small-scale farmers. For the qualitative part of the study, a sample group of farmers were chosen through purposive sampling, consisting of 6 large-scale farmers, 8 medium-scale farmers and 16 small-scale farmers. The data collection process includes structural questionnaires, issues in group discussions, brainstorming and community meetings. The quantitative data is analyzed by descriptive statistics while the qualitative data is analyzed by content analysis.

Results and Conclusions
The findings are as follows: 1) The sugar cane farmers were united in their participation as a sugar cane farmers association. They operated contract farming and received information technology from various local knowledge and agencies. 2) The sugar cane extension in Thailand is mainly from the private sector which focuses on one-stop service. 3) In the extension model, the most suitable model for sugar cane extension in Thailand should start with sugar cane extension sectors which are divided into two forms. These are the sectors which supported sugar cane farmers in their production and the sectors which extended sugar cane production directly.
There are both government and private sectors which supported sugar cane farmers in production. The government sector is the Office of Sugar Cane and Cane Sugar Commission which stressed on information regarding general policies and guidelines for long term sugar cane farming. There are other extension officials from Thai Sugar Miller Corp, a private sector entity who are responsible to provide information on marketing. The sectors which extended sugar cane production knowledge directly are the cane sugar mills.

**Recommendation**

This sugar cane extension model is an integration of extension sectors using the strategy of the complete cycle extension to benefit sugar cane farmers. For this model to be effective, both government and private sectors should work together to encourage farmers through the identification and provision of more effective knowledge sources to increase farm productivity. Furthermore, it should establish a knowledge bank and create a role model farmer to lead the way to self independence and to a sustainable agriculture development.

**References**


Texas Tech University – Zamorano University Internship Program: International Agricultural Cooperation through Education and Research

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Introduction

As part of a larger outreach agricultural program, focused on improving food safety, and education (Jurek, 2013), an internship agreement program was established with Zamorano University (ZU) in Honduras. ZU is a leading agricultural university in Latin America; with an enrollment of 1214 students from 20 different countries (Zamorano University, 2011). The objective of this internship program is to bring students from underprivileged countries, struggling with food security and safety issues, and prepare them to become leaders that contribute to the development of agriculture in their home countries.

How the innovative program works

ZU sends prospect applications and Texas Tech does the final selection, placing and matching of applicants. Selection criteria includes: transcripts, CV, TOEFL and letter of intent. Selected students are paired with faculty mentors. Faculty mentors provide students with daily activities, research projects, job functions and responsibilities. The objectives of this internship program are to: improve English proficiency, improve critical and creative thinking, develop undergraduate research skills, develop skills for transition into academic environment, and deepen understanding of U.S. agriculture. Accomplishment of each objective is assessed by the completion of relevant activities (surveying graduate level classes, presenting posters at research conferences, and trips to U.S. agricultural production facilities) and the implementation of measurement metrics (cultural awareness and sensitivity tests, research integration tests and creative and critical thinking tests; and results from TOEFL and GRE scores).

Results
In spring 2013, six interns were accepted into the program at TTU. Five of the six interns will be returning to TTU to enroll in graduate school. The number of interns increased to eleven in spring 2014. Interns work with seven faculty members in four academic departments.

**Conclusions/Implications**

This program is mutually beneficial. TTU benefits from the help provided by the students to ongoing research. Research projects developed by the interns are presented at research conferences enhancing their undergraduate education and preparing them for graduate school. The cultural exchange is beneficial for interns and TTU to increase cultural awareness. Interns benefit from this program by gaining research experience, learning new technologies and acquiring new skills (Garcia, 2011). This research education internship program is an excellent opportunity to recruit outstanding graduate students and to prepare them to become leaders in agriculture in their home countries.

**Recommendations**

We recommend TTU be more involved in the selection process of the candidates. Letters of recommendation and interviews to the candidates should be encouraged to maximize the number of interns that will continue with their graduate studies. Future efforts should be conducted to start an internship program for TTU students to go to ZU, to foster the cultural exchange from both institutions.

**Cost/Resources**

Interns are provided with room and board at the university campus at a cost of $4000 per student. Students also receive a $500 monthly stipend. Interns pay for their visa processing fees and travel expenses. A ZU alumnus was hired to manage the internship program.

**References**


Introduction

The Green Revolution dramatically increased agricultural output since the 1960s (Conway & Barbier, 2013; International Food Policy Research Institute [IFPRI], n.d.). Effects were greatest in developing countries, notably India, Mexico, and the Philippines. In India, the Green Revolution increased wheat yields by 774% and rice yields by 242% (Food and Agriculture Organization [FAO], 2013), transforming the nation from famine to agricultural surplus and stimulating development (Evenson & Gollin, 2003). Similar trends also occurred in Mexico and the Philippines. However, the Green Revolution’s long-term impacts are often criticized (Shiva, 1992). Population growth is one side-effect, and indeed the populations of India, Mexico, and the Philippines rose exponentially during the Green Revolution (FAO, 2013). Population growth also affects per capita food supply, poverty, and malnutrition.

Methodology

This study explored long-term trends related to the Green Revolution in India, Mexico, and the Philippines. Independent variables were total wheat and rice production (tons). Dependent variables included population, total food supply (tons), per capita food supply (kilograms/year), poverty (percent under $1.25/day), and malnutrition (percent of underweight children). Data was obtained from the FAO, World Bank, and World Health Organization databases. Linear regression determined the direction and scale of trends, while correlation coefficients identified strengths of relationships between variables (Ary, Jacobs, & Sorensen, 2010).

Results

Results varied by country. Indian wheat (+1,614,314 tons/year) and rice production (+2,318,540 tons/year) showed greater annual increases than total food supply (+1,340,462 and +1,970,320 tons/year), suggesting surpluses were exported. Although production outpaced population growth, per capita food supply showed minimal improvement (+0.6537 and +0.1890 kilograms/year) and poverty decreased only slightly (-0.0092%/year). The largest production gains occurred in the second decade but leveled off over time. Per capita food supply also increased the first two decades before showing negative trends over the final three decades.

Mexican wheat production showed positive gains over the total timeframe (+29,238 tons/year) but peaked in 1985 before dropping almost to pre-Green Revolution levels. Total (+58,259 tons/year) and per capita food supply (+0.7624 kilograms/year) instead continued to
rise, suggesting other crops had greater impact. Poverty (-0.0034 %/year) and malnutrition (-0.5731 %/year) also showed consistent gains, suggesting these factors were not closely tied to wheat production.

In the Philippines, rice production (+261,335 tons/year) and total food supply (+263,260 tons/year) increased in parallel while per capita food supply (+0.9112 kilograms/year) also rose steadily, suggesting a focus on domestic consumption. The greatest production gains occurred in the first two decades, after which total and per capita food supply outpaced production. Consequently, poverty and malnutrition dropped most significantly in the latter three decades.

**Implications and Conclusions**

The data suggests several conclusions. First, production gains peak and then recede, thus benefits depend on countries’ utilization of these gains. India used exportation for economic development, thus food consumption and poverty did not improve as significantly as in the Philippines where domestic food supply was prioritized. Also, whereas the literature cites major social impacts of the Green Revolution, low correlation coefficients suggest a range of factors contribute. More research is required to identify other variables that may influence findings.

**References**


Transformational Model of Extension Education for the Promotion of Integrated Family Farming Systems in Kerala, India

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Introduction
Recognizing the multiple social, economic, environmental and cultural functions of small and family farm holders who produce more than 50 percent of the world’s food and are important guardians of biodiversity, the UN declared 2014 as the International Year of Family Farming. Swanson (2008) emphasized the need for empowering small and family farm operators in the developing nations to adopt climate resilient agriculture. In the Indian State of Kerala with 6.8 million small and family farms averaging 0.22 ha in size, integration of farming systems through revitalized extension education is indispensable to enhance farm incomes sustainably, Rajasekharan & Rajasree (2013) reiterated. With this objective, an innovative transformational model of extension education has been developed and pilot tested for promoting Integrated Family Farming Systems (IFFS) in Kerala. The theoretical themes, operational aspects and impact of the model including the strategy for its scaling up are illustrated here.

Methodology
Based on the review of literature, the components and impact of traditional and transitional models of agricultural extension education in Kerala were delineated. An array of Good Extension Practices (GEP), which constituted the dimensions of the transformational model could be identified through this. The dimensions such as leadership, focus, locus, nature, drivers, cost, sustainability and equity were fine tuned in the context of IFFS in Kerala utilizing the ‘practice-dimension matrix’ developed by Bhaskaran (2004). The impact of the transformational model was evaluated using focus group discussions.

Results
The transformational model, when fine-tuned with the IFFS in Kerala, resulted in a ‘best practice mix’ approach. With the acronym ‘MIDICCI’ (meaning smart woman in Malayalam language), this approach recognizes the crucial role played by women in IFFS of Kerala. It includes the best practices such as Multi-purpose extension provision (M), Intensification of cropping with diversification (I), Decentralized and participatory planning and implementation (D), IT/ICT/Hybrid Communication Tools/social media use for conscientisation campaigns (I), Capacity building for knowledge intensive farming (C), Convergence of programs and agencies at all levels (C) and Innovative institutions for social entrepreneurship development (I). This approach forms the framework for the Agricultural Technology Management Agency Plus (ATMA PLUS) program implemented now in the Kerala state. ATMA PLUS focuses on developing situation-specific IFFS models for maximizing net returns and to organize them as production catchments of ethnic and safe food. Social capital too is promoted by forming the federated structure of Farmer Extension Organizations (FEOs). These innovative interventions enhanced crop productivity and income by 20 percent. Appreciable social mobilization among stakeholders was also reflected in focus group discussions.

Conclusions and recommendations:
The generic transformational model and the IFFS-specific ‘MIDICCI’ approach have theoretical and educational programming values. The family farms as innovative and resilient production systems require to be scaled up with policy support. These IFFS models can be utilized as ‘farm schools’ facilitating farmer-to-farmer extension. This will ensure the livelihood security of the small and marginal farm families thereby addressing the concerns of equity, economy and environment essential for sustainable agricultural development.

References:
Understanding the Impacts of a Multidisciplinary Team Experience through Sociocultural Learning

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Introduction

Teamwork is essential in investigating complex, multifaceted topics. Multidisciplinary teamwork is a suitable option when individuals have different information, knowledge, and expertise (Van Der Vegt & Bunderson, 2005). Such diversity offers unique perspectives which contribute to the understanding of complex topics. The world today has a high level of complexity which adds an additional critical variable to the understanding of effective problem solving involving international teams (Brodeur, 2007).

Theoretical background

Multidisciplinarity is a process in which scholars from different fields work independently or sequentially (Rosenfield, 1992). Participants share individual perspectives for the broader exploration of the common topic. Under the premise of social constructivism (Vygotsky, 1978), through this exchange, participants create their own knowledge.

The social environment of this multidisciplinary experience serves as a facilitator for development and learning (Schunk, 2012). Vygotsky posited that the interaction of interpersonal, cultural, and individual factors were key to learning and human development. Social interactions are essential; learning does not occur in isolation. These interactions greatly affect construction of knowledge and concepts.

Purpose

The study’s purpose was to understand the impact of a multidisciplinary team experience on individuals’ understanding of climate change. The research objectives were: (a) determine the impact of discipline specific perspectives on participants’ thinking about climate change and (b) determine perceived value of the experience.

Methodology

Participants of this study were faculty and doctoral students who travelled to a Caribbean nation to gain a better understanding of climate change ($N = 13$). The online questionnaire, utilizing the tailored design method (Dillman, Smyth, & Christian, 2009), was a census sent to
all 13 participants, of which 11 respondents completed the questionnaire yielding an 85% response rate. The questionnaire consisted of nine Likert scale questions (1-5), open-ended questions, and demographic questions. The four open-ended questions were analyzed using the constant comparative method of thematic analysis (Glaser, 1965).

Results

Objective One: The majority ($N = 9$) said their knowledge about climate change was influenced by interactions with peers during the experience. “[Traveling with a multidisciplinary team] greatly expanded my perspective on the issue” (Participant 4). Similarly, another participant stated: “By traveling with colleagues from various disciplines, I have come to think more about how, people, cultures, and countries will be, and are, impacted by climate change” (Participant 7).

Objective Two: Participants stated several benefits to multidisciplinary teamwork. Emergent themes included: opportunities for collaboration, exposure to different disciplines, and gaining new perspectives. “[The experience was] tremendously valuable. We should always be learning, especially as faculty, and to have an opportunity to interact with folks in other disciplines for a long period of time is invaluable in fostering an exchange of knowledge” (Participant 3).

Implications Multidisciplinary experiences have significant impacts on concept learning. Knowledge of climate change was influenced by participation in this experience. Sociocultural learning theory is a sound base for guiding this type of experience. Through the construction of new knowledge, participants yield a richer perspective which can be provided to others. A multidisciplinary perspective can lead to innovative solutions to complex problems.

References


