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### Editors

---

Kim E. Dooley, Executive Editor  
Agricultural Leadership, Education & Comm.  
Texas A&M University  
2116 TAMU, 128B AGLS Bldg  
College Station, TX 77843-2116  
Ph. 979-845-6923  
k-dooley@tamu.edu

Tracy Irani, Associate Editor (Tools & Book Reviews)  
Agricultural Education and Communications  
University of Florida  
220 Rolfs Hall  
Gainesville, FL 32611-0502  
Ph. 392-0502 ext. 225  
irani@ufl.edu

Brenda Seevers, Managing Editor  
Agricultural and Extension Education  
113 Gerald Thomas Hall  
New Mexico State University  
Las Cruces, NM 88003  
Ph. 575-646-4511  
bseevers@nmsu.edu

Maria Navarro, Associate Editor (Commentary)  
Dept. of Agri. Leadership, Ed., & Comm.  
The University of Georgia  
105 Four Towers  
Athens, GA 30602-4355  
Ph. 706-542-0262  
mnavarro@uga.edu

James R. Lindner, Past Editor  
Agricultural Leadership, Education & Comm.  
Texas A&M University  
2116 TAMU, 128D AGLS Bldg  
College Station, TX 77843-2116  
Ph. 979-458-2701  
j-lindner@tamu.edu

Amy Harder, Managing Editor Elect  
University of Florida  
P.O. Box 110540  
Gainesville, FL 32611-0540

---

### Association for International Agricultural and Extension Education Officers

---

James R. Lindner, President  
Texas A&M University  
2116 TAMU  
College Station, TX 77843

T. Grady Roberts, Secretary  
University of Florida  
P.O. Box 110540  
Gainesville, FL 32611-0540

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Texas Tech University  
Box 42131  
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2116 TAMU  
College Station, TX 77843

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University of Swaziland  
PO Box 1711  
Manzini M200  
Swaziland

Samantha Alvis, Graduate Student Representative  
Texas A&M University  
2116 TAMU  
College Station, TX 77843

---

**U.S./World Representatives**


---

Adewale Johnson Alonge  
Miami-Dade Public School System  
9034 SW 163 Terrace  
Miami, FL 33157  
alongeaj@yahoo.com

Barnabas Dlamini  
University of Swaziland  
Agricultural Education and Extension  
PO Luyengo, Swaziland  
bmd@africaonline.co.sz

David Dolly  
University of West Indies  
Agricultural Economics and Extension  
St. Augustine, Trinidad and Tobago  
farmdavid42@hotmail.com

Amy Harder  
University of Florida  
Agricultural Education & Communication  
307B Rolfs Hall  
Gainesville, FL 32611-0540  
amharder@ufl.edu

Delwar Hossain  
Centre for Rural and Remote Area Health  
University of Southern Queensland (USQ)  
West Street, Toowoomba, Qld 4350, Australia  
delwar.hossain@usq.edu.au

Mike McGirr  
USDA-CSREES  
800 9<sup>th</sup> Street  
Waterfront Centre  
Washington, DC 20024  
mmcgirr@csrees.usda.gov

Martin Mulder  
Wageningen UR  
Department of Social Sciences  
Education and Competence Studies  
6706 KN Wageningen  
The Netherlands  
Martin.mulder@wur.nl

Jim Phelan  
School of Biology and Environmental Science  
UCD Agriculture and Food Science Centre  
University College Dublin  
Belfield, Dubine 4, Ireland  
James.phelan@ucd.ie

Chukiat Ruksorn  
Director of Extension & Training, Kamphaengsaen  
Kasetsart University  
Nakorn Pathom  
Thailand, 73140  
eat.kps@ku.ac.th

Anita Zavodska  
Barry University  
12860 SW 15<sup>th</sup> Manor  
Davie, FL 33325  
azavodska@mail.barry.edu

### **From the Executive Editor**

I am pleased to publish the summer issue of *JIAEE*. Three feature articles were included with highlights of scholarly works presented at the World Conference 2011 in Windhoek, Namibia. If you were unable to join us for the conference, I hope you will enjoy reading the abstracts of papers presented and a list of the poster presentations. Award winners in various categories are also listed in this issue.

The theme for the conference this year was “Sustainable Value Chain Agriculture for Food Security and Economic Development.” This conference was hosted by the University of Namibia with partners from other associations (AGRISSON, IAALD, and INFITA). The conference would not have been possible without the hard work and dedication of many people. I would like to personally thank Martin Schneider, Jack Elliot, Samantha Alvis, and David Lawver for their leadership and service to the organization.

I thought I would take this opportunity to give you a “state of the journal” report. The acceptance rate for Volume 17 was 16%. For this volume there were 56 reviewers from 11 countries. We currently have 139 paid journal subscribers/members and 17 library subscriptions. The journal is financially solvent. We inducted a new managing editor at the conference. Amy Harder will be moving into that role in January, 2012. Brenda Seevers will be executive editor and I will be past editor. I would like to recognize Jimmy Lindner for his service on the journal executive team.

We are in the process of updating our rights and responsibilities for reviewers and authors. We want to ensure an efficient review and publication process while maintaining the integrity of the double-blind review. We are considering expanding our reviewer pool based upon expertise rather than prior publication in the journal. We will be updating our editorial board this year. Please let us know if you are interested in serving in one of these roles.

I hope you enjoy the issue and will consider submitting papers presented at the conference for publication in *JIAEE*.

Sincerely,



Executive Editor, *JIAEE*

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## **A Professional Competency Development Model: Implications for Extension Educators**

Nav R. Ghimire

Green Lake County University of Wisconsin-Extension

571 County Road A, Green Lake, WI 54941

Phone: 920-294-4037

Email: nav.ghimire@ces.uwex.edu

Robert A. Martin

Department of Agricultural Education and Studies

Iowa State University, 201 Curtiss Hall, Ames, IA 50011

Email: drmartin@iastate.edu

### **Abstract**

*Professional development refers to continuing education designed to enhance competencies, skills, and knowledge. There is a need for a professional development model based on the educational processes used by educators of adults. A professional competency development model was constructed from a study grounded on four educational process areas in Extension. In this study, 441 randomly selected Extension educators in the North Central Region of the United States participated through an online survey. The proposed model has implications for designing professional competency development programs in the areas of needs assessment/program development, teaching and learning methods, delivery strategies, and evaluation methods. It also indicates the best time and place for Extension educators to develop the competencies and suggests a mechanism to continuously identify the knowledge and skills needed to obtain the best results. This model could be used to develop educational programs in a variety of national and international settings.*

**Keywords:** Extension, Educational processes, Professional development

### Introduction and Review of Literature

Professional development is a commonly used term in the publications of educational institutions (Komives & Woodard, 1996). In the literature, the terms “in-service development,” “staff development,” “in-service education,” “staff training,” and “professional development” are frequently used interchangeably. Truitt (1969) defined in-service development as “all activities used to engage an employee to improve the skills, techniques, and knowledge that will enable him/her to become an effective agent of education” (p. 2). Beeler (1977) stated that the term staff development “generally refers to in-service continuing education, or staff training, designed to enhance the competencies, skills, and knowledge of individuals and to enable them to provide better service to their clientele” (p. 38).

The term “professional development” is used in the Cooperative Extension Service to refer to the broad array of learning experiences that builds an Extension educator’s capacity as a professional, enhances his/her ability to respond to local needs, or assists in meeting long-term career goals (University of Kentucky, 2008). Mincemoyer and Kelsey (1999) defined professional development as education delivered to Extension educators in a structured setting that enables them to become professionally competent. Sims (1998) stated that professional development is a continual learning process which can be designed to keep Extension educators current in their fields and to anticipate the future needs of the organization and clientele. McKenzie (1991) stated that professional development is important because it can make a significant difference in the performance of educators and ultimately in the performance of their clientele.

Extension enables its clients to meet their educational needs and to solve problems. Extension educators identify

community needs, develop educational programs, and involve people in learning activities. Over the years, the needs of the communities have changed with technical advancements and changing social and environmental situations (Morse, Brown, & Warning, 2006). Given these changes, Extension must sharpen its focus and communication skills (Stone & Bieber, 1997). Stone and Coppennoll (2004) stated that the success of Extension depends on educators’ technical expertise, educational processes, and communication skills.

According to Seevers, Graham, and Conklin (2007), Extension educators are mainly hired based on their technical expertise rather than their abilities to utilize educational processes for successful program planning and implementation. Dromgoole (2007) stated that program excellence in the Cooperative Extension Service is contingent on an educator’s ability to identify and prioritize issues, develop and implement educational programs, evaluate outcomes, and utilize evaluation results to redirect future planning. Cooper and Graham (2001) stated that future success will depend on the capacity of Extension to retain qualified educators with the abilities to adopt and adapt educational processes for appropriate program development and delivery. Therefore, it is important for educators to continuously develop professional competencies to be effective in their jobs and to be successful agents of change (Kutilek, Gunderson, & Conklin, 2002; Watermolen, Andrews, & Wade, 2009).

Stone and Bieber (1997) stated that competency development focuses on areas in which an individual or a work group can demonstrate excellent performance and link these areas to the Extension organization’s strategic direction. They emphasized Extension’s need for a competency development model and claimed that such a model could redefine Extension’s roles in future education.

The Extension Committee on Organization and Policy report stated that Extension lacks strong professional development programs to help its staff stay current in the face of changing situations (ECOP, 2005). Businesses and agencies worldwide are seeking to apply effective professional development programs for staff competency, but they are struggling with the implementation and institutionalization of such programs into day-to-day practice (Fenwick, 2003). Bryan and Schwartz (1998) stated that although the importance and needs for staff development are widely accepted, it has always been a challenge for organizations to accomplish it. We argue that Extension needs a framework or model to design a strategic professional competency development plan and subsequently needs to develop programs that will accomplish that plan.

Extension is the largest non-formal adult education provider for rural populations in the United States and adult education is its principal role (Rivera, 1998). Therefore, using appropriate adult learning and teaching processes is essential (Franz, Garst, Baughman, Smith, & Peters, 2009). King and Lawler (2003) stated that as the world is changing around us, there are challenges ahead to shape the professional development programs needed for educators of adults. However, little attention is being paid to the learning needs of the educators themselves.

According to Lawler and King (2003), because external stakeholders demand more accountability from educational organizations, a professional competency development model must be constructed to identify strengths and weaknesses in the professional development programs. Lawler and King further stated that such models are lacking in professional development programs. They claimed that although there were many models of good practice for program planning, training and development, and adult education, there

were few that address the best practices of professional developers working with educators of adults.

A professional competency development model constructed from this study attempts to provide Extension with guidelines for developing a proactive professional development system. Kutilek et al. (2002) stated that maximizing Extension educators' career potential and organizational effectiveness depends largely upon a systematic approach to professional development. The proposed professional competency development model depicted in Figure 1 is grounded in the four educational process areas identified as important for Extension educators by the North Central Region-158 Committee on Adult Education in Agriculture (Martin, 1991). These four areas are the following: needs assessment/program development, teaching and learning methods, delivery strategies, and evaluation methods. In 2006, the Excellence in Extension Task Force and the Work Group of the Extension Committee on Organization and Policy (ECOP) confirmed Extension's need for these four areas to plan and implement quality educational programs. The National Research Agenda for Agricultural Education and Communication (2007-2010) also identified these four areas as the important national research priorities for agricultural education and communication (Osborne, 2005).

Martin (1991) stated that Extension educators in all disciplines must develop competencies related to these four educational process areas in order to perform their jobs effectively. Studies were conducted to identify the training needs for Extension educators as early as 1920 by Crosby and as recently as 2010 by Schwarz and Gibson. After reviewing the literature, we found that Extension in the North Central Region lacked a comprehensive assessment of the competencies related to the four educational process areas.

### **Purpose and Objectives**

The purpose of this study was to determine the importance of competencies related to the selected four educational process areas as perceived by Extension educators in the North Central Region of the United States and to identify when these competencies should be learned. One of the objectives was to develop a professional competency development model utilizing the findings from the study. This article is a part of a larger study; therefore, it only presents and discusses a professional competency development model and the implications of such a model for Extension and related agencies.

### **Methods and Procedures**

The researchers conducted a study using a survey research design, and developed a model from the findings. The target population for the study consisted of Extension educators working in the 12 states of the North Central Region from which 811 samples were selected randomly. The questionnaire was e-mailed to participants using Survey-Monkey. A total of 441 useable responses were collected, generating a final response rate of 55%.

The data-collection instrument was a closed-form questionnaire containing 42 professional competencies in the selected four educational process areas. A panel of four experts reviewed the instrument for face, content, and construct validity. The panel identified these 42 competencies as a set of procedures for program development, delivery, learning, and evaluation of educational activities in Extension.

A pilot study was conducted to establish the reliability of the instrument. Reliability coefficients (Cronbach's alpha) for the competencies were as follows: .81 needs assessment/program development; .83 teaching and learning methods; .74 delivery strategies; and .71 evaluation methods. According to George and Mallery (2003), a Cronbach's alpha  $\geq 0.7$  is appropriate to

conduct a study. To determine the importance of the competencies, respondents' perceptions were measured on a five-point Likert-type scale ranging from 1-being very low importance to 5- being very high importance. The best setting in which to learn each competency was selected from three different categories: graduate programs, on the job, and in-service programs. The questionnaire also requested that respondents suggest additional competencies apart from the professional competencies included in the questionnaire.

Means, frequencies, percentages, and standard deviations were computed from the data to determine the importance of competencies and the best settings in which to learn them. From the findings, a professional development model was constructed to implement the educational processes in the Extension system in the North Central Region.

### **Results and Discussion**

Extension serves a variety of audiences, approaching them with a variety of programs. It has a multifaceted organizational structure; implements educational programs funded by multiple levels of government; and serves rural, urban, and peri-urban audiences ranging from youth to adults of various ages and backgrounds. Therefore, competency, in the sphere of Extension work, can be a difficult concept to assess.

In designing a professional competency development model for Extension educators, the authors were not, of course, starting from scratch because they had a considerable amount of data on competencies related to the educational processes from the findings of this study. Apart from that the authors had suggestions from the respondents for additional competencies that they perceived as important for Extension educators in the North Central Region.

The authors aimed to produce a professional development framework for Extension that would bring together the coherent elements of the educational processes into a single holistic model. The model described in this section attempts to unify the four educational processes that are the key features in planning, implementing, delivering, and evaluating Extension's educational programs. The proposed model, its features, and implications are described in the following paragraphs.

The purpose of the proposed professional competency development model is to contribute to the professional growth and development of Extension educators in the North Central Region of the United States. One of the objectives of this model is to increase the levels of efficiency and productivity of the Extension educators' in the area of four educational processes.

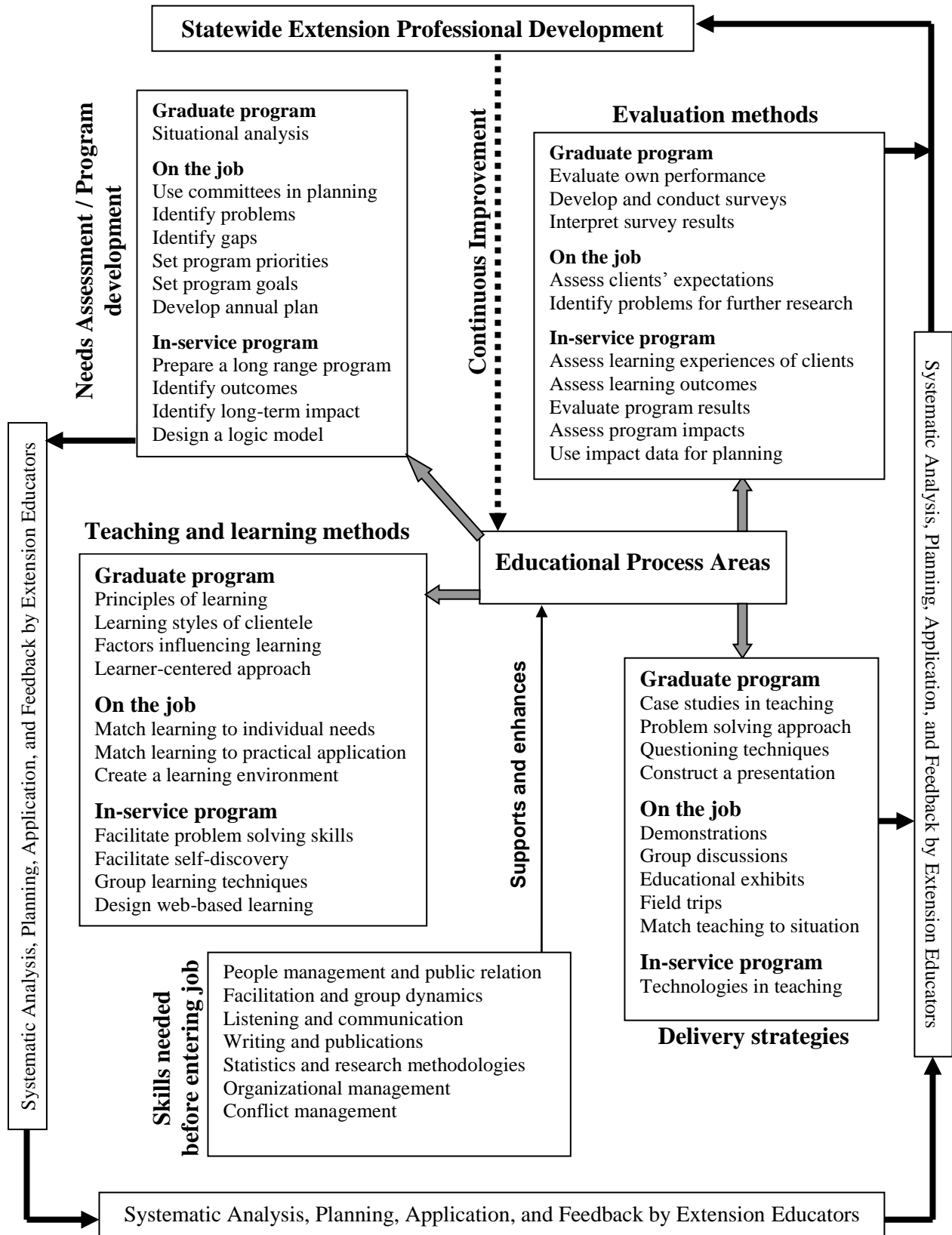
The model portrayed in Figure 1 consists of 42 competencies categorized under the four educational process areas: 11 competencies under needs assessment/program development, 11 competencies under teaching and learning methods, 10 competencies under delivery strategies, and 10 competencies under evaluation methods. The findings revealed that respondents perceived 81% of these competencies as highly important and the remaining items as moderately important.

In the model, each educational process area with required competencies is represented by a separate box. One of the important characteristics of this model is that it clearly depicts the time and/or setting in which to develop each of the competencies as reported by the respondents such as graduate program, on the job, or in an in-service training program. Roberts (2007) stated that based on their experiences in the work place employees do not prefer the same settings in which to develop professional competencies.

Professional development programs for adult educators work best if opportunities for acquiring competencies are provided through formal education, conferences, workshops, trainings, and other means (Merriam, Caffarella, & Baumgartner, 2007; Seevers et al., 2007).

The competencies in the area of "needs assessment/program development" are presented in Figure 1 in the box at the top in the left corner of the model. According to the model, the skills needed to conduct socioeconomic and cultural situational analysis of a community are best learned in graduate programs. The skills needed to use various committees (e.g., advisory committees) to identify clients' problems, set priorities and goals, and develop an appropriate plan to meet the needs of the communities are best learned on the job. Similarly, the model suggests that the best settings for Extension professionals in which to develop the competencies required to identify program outcomes and long-term impacts as well as to use a logic model to demonstrate program development and implementation processes are in-service programs.

The competencies presented in the box in the middle left of Figure 1 are related to the educational process area of "teaching and learning methods". This box indicates that graduate programs are the best settings in which to learn the principles of learning, skills needed to identify the learning styles of clientele and factors that influence their learning, and the skills needed to use a learner-centered approach in Extension. The competencies required for matching appropriate learning styles to the individual needs of clientele and for matching learning styles for practical applications are best developed on the job. Similarly, skills needed to use learning techniques to develop clients' problem-solving skills and to facilitate their self-discovery potentials are best learned in in-service programs.



**Figure 1. Professional Competency Development Model**

At the bottom right corner of the model in Figure 1 depicted in a box are the competencies in the area of “delivery strategies”. The model indicates that the best settings in which to develop the competencies needed with case study work, problem solving approaches, and questioning techniques while teaching an audience are graduate programs. The skills needed to conduct demonstrations, group discussions, exhibits, and field trips should be learned on the job through practice. The skills needed to use technologies in Extension teaching to promote active and participatory learning should be learned in in-service programs. The modern technologies for extension program delivery may include the use of high-tech approaches, such as distance-based learning and on-line resources that allows Extension organizations to reach larger and wider audiences. Choice of a delivery system is one of the crucial decisions made by Extension professionals, and it can have serious consequences for program effectiveness (Rodewald, 2001).

The box at the top in the right corner of Figure 1 presents the competencies in the area of “evaluation methods”. Listed in the box are some competencies that should be developed in graduate programs: how to evaluate one’s own performance as an educator, how to develop and conduct a survey, and how to analyze and interpret the responses gathered from such surveys. Similarly, the competencies required to assess client expectations and identify problems requiring further research should be developed on the job. The evaluation competencies such as assess learning experiences of the clients; identify program results, outcomes, and impacts; and develop the skills to use impact data for planning future educational programs should be learned in in-service programs.

Apart from the professional competencies related to the four educational processes areas, at the bottom left corner of

the model in Figure 1 additional competencies are depicted in the box named “skills needed before entering job”. These additional competencies represent skills needed by Extension educators in the areas of people management and public relations, facilitation and group dynamics, listening and communication, writing and publications, statistics and research methodologies, organizational management, and conflict management. It is expected that identified additional competencies can play important roles to support and enhance Extension educators’ abilities to develop professional competencies in the educational processes (*see an arrow from the box at the bottom to the box in the center*). These additional competencies were derived from the respondents, who suggested that Extension educators in the North Central Region may need competencies beyond those included in this study. These additional competencies are listed in the model under “skills needed before entering job” because some authors (Carnevale, Gainer, & Meltzer, 1988) suggested that these competencies are the “skills that the employers are looking for in entry-level workers”.

### Conclusions

The proposed model in Figure 1 assumes that after their participation in the professional development programs, Extension educators will systematically apply learned knowledge and skills in their day-to-day work. In addition, they will analyze their experiences regarding the impact of such skills in various educational activities and report their feedback to state Extension leaders (*see an arrow leading through vertical and horizontal boxes to the box on the top of the model*). These assumptions emphasize the importance of reflection in this developmental process.

According to Gustafsson and Fagerberg (2004), professional development models need to focus on reflection as a tool

for improving employee performance and competencies. Reflection is a process of looking into one's experiences and then converting them into meaningful learning that ends in better choices or actions (Rogers, 2001). Reflection involves allowing one's own ideas, theories, beliefs, values, and mental models to be informed by the ideas, theories, and beliefs of others in order to examine and interpret one's experience(s) for purposeful meaning (Fiddler & Marienau, 2008).

The model is also based on the assumption that state Extension leaders will adopt a mechanism to obtain continuous feedback from Extension educators. The comments and feedback provided by the educators will continuously improve the competency development programs in their states (*see a dotted arrow from the box on the top of the model to the box in the center*).

Therefore, this model raises expectations that appropriate coordination and cooperation will be developed by Extension educators and state leaders for continuous modification of competency development programs according to the changing needs of the audiences. Gusky (2003) compared 13 different lists of characteristics of effective professional development. Most lists mentioned collegiality and collaboration among professionals. According to Stone and Bieber (1997) and Stone (1997), competency development is a participatory process, and it provides Extension professionals with an opportunity to identify the knowledge, skills, and behaviors to obtain the best results as well as to identify the skills and functions that are no longer effective.

### **Limitations of the Model**

The model was developed from data collected from a survey questionnaire. Therefore, it leaves out the use of qualitative methods in need assessment and program evaluation. Besides surveys, professional

development leaders are suggested to include qualitative methods in training curriculum for Extension educators intending to use such methods for data collection and analysis. The authors also want to clarify the possibility of using only a few elements of the four educational process competencies in different times of professional development training. Selection of the listed competencies for training depends on Extension educators' educational backgrounds, experiences, and needs in the workplace.

### **Implications and Recommendations**

Based on the information presented, the model portrayed in Figure 1 can have various implications for national, regional, and statewide extension service in the United States. First, it provides guidelines for developing effective professional development programs needed by Extension educators.

Second, the model is useful for designing educational process competency courses in Extension's in-service and on-the-job training programs. Similarly, the model has implications for design of educational process competency courses at the land-grant universities and colleges of the United States for mid-career professionals as well as for students attempting to develop their professional careers in Extension. In addition, the model can be used to design potential undergraduate and/or graduate courses for students specializing in development of professional competency skills valued by prospective employers and/or those needed by Extension educators (see the box "skills needed before entering job" in Figure 1).

Third, the model can be a landmark to design new policies for employee selection, training, professional development, performance appraisal, and succession planning in the Cooperative Extension Service. The new policy design for employee selection includes Extension

educators, professional development experts, and related staff. Fourth, this model has implications for identification of organizational training priorities in the areas of the educational processes both in public and private agencies.

Fifth, because it points out that the best setting in which to develop many educational process competencies is on the job with practice, the model has implications for adoption of experiential learning approaches in professional development programs through appropriate research, policy, training, and other means.

Sixth and finally, the model has implications for conducting further research related to the educational processes in Extension as well as conducting research to identify the relative importance of and best place to learn the professional competencies listed under “skills needed before entering job.”

Staff development is critically important to help professionals stay on the cutting edge of the delivery process, so continuous learning and updates of knowledge related to both “product” and “process” are essential. Product refers to the technologies needed by the clientele and process refers to the soft skills required by the staff to deliver these technologies to the target audience. The mission of the Cooperative Extension Service is to effectively deliver new technology, programs, and services to people to improve their lives. Therefore, the professional development model derived from the findings of this study can play an important role in developing the competencies needed by the Extension educators in planning and implementing the educational programming.

This study has a new perspective on Extension educators’ professional development through a professional competency development model. We recommend that state Extension leaders and professional developers reflect on this model and seek opportunities for the best practices

to enhance the professional competencies of Extension educators in the United States. Apart from the extension services in the United States, this model has important implications in various international extension settings and is discussed below.

Government agencies provide agricultural Extension services in the countries of South America, Asia, Africa, Oceania, and Europe. Theories and principles of Extension applied in these countries are similar to those in the United States. As a shift in the program delivery process, governments in developing countries of the world have organized farmers into groups to minimize cost and time in the technology transfer process (Fleischer, Waibel, & Walter-Echols, 2002; Scarborough, Killough, Johnson, & Farrington, 1997). In this context, the competencies in four educational process areas listed in the model (Figure 1) have implications for planning and delivering agricultural Extension programs to farmers.

In developing countries, farmers generally believe Extension professionals to be technically competent, to have a range of practical skills, and to be able to give comprehensive advice on farm planning (Ponniah, Puskur, Workneh, & Hoekstra, 2008; Watts, 1970). On the other hand, inadequate training of agricultural Extension staff has been identified as the major bottleneck in responding to the ongoing developments (Rogers, 1996; Swanson, Farner, & Bahal, 1990). Therefore, a common theme for Extension personnel in these countries appears to be a lack of knowledge and skills required to be effective in a complex and rapidly changing agricultural environment (Duo & Bruening, 2007).

The professional competency development model in Figure 1 can be used to implement professional training programs for Extension educators in these countries as well as to identify their training priorities according to farmers’ growing need for

knowledge and development. It is recommended that agricultural Extension training centers in the countries of South America, Asia, Africa, Oceania, and Europe conduct studies with Extension professionals to verify the relevance of the current study and to develop professional development models that meet the need of Extension educators in various settings.

It is also recommended that the international agencies (e.g., FAO, World Bank, Asian Development Bank, and USDA) working for agricultural development in developing and underdeveloped countries examine the elements of the model in Figure 1 and its possible implications for training Extension staff and developing local programs.

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**An Assessment of the Impact of Internship Programs in the  
Agricultural Technical Schools of Egypt as Perceived by Participant Groups**

Catherine W. Shoulders  
Department of Agricultural Education and Communication  
310 Rolfs Hall PO Box 110540  
Gainesville, FL 32611-0540  
Phone: 352-392-0502 x238  
Email: katewoggs@ufl.edu

R. Kirby Barrick  
College of Agricultural and Life Sciences  
University of Florida  
2001 McCarty Hall PO Box 110270  
Gainesville, FL 32611-0270  
Phone: 352-392-1961  
Email: kbarrick@ufl.edu

Brian E. Myers  
Department of Agricultural Education and Communication  
University of Florida  
307A Rolfs Hall PO Box 110540  
Gainesville, FL 32611-0540  
Phone: 352-392-0502 x236  
Email: bmyers@ufl.edu

**Abstract**

*Experiential learning including student internships has been central to instructional programs in agriculture for decades. If the Agricultural Technical Schools of Egypt are to prepare students for successful careers and to enhance the agricultural economy, teachers must be well-prepared to use this teaching technique. Further, all stakeholders, including students, teachers, parents, headmasters and agribusiness owners, must recognize the importance and impact that implementing a student internship program could have. In this study, all groups identified important contributions to student learning and growth as a result of student participation in the internship program. While several suggestions were posited to improve the program, all agreed that the schools, the communities, the agribusinesses and the students received valuable benefits. The program of student internships in Egypt could be adopted in other countries where the agricultural economy could be improved through a better prepared agricultural workforce.*

**Keywords:** Internships, Egypt, Experiential learning, Impact assessment

### Introduction

Experiential learning, including activities such as supervised agricultural internships, focuses initially on the learner (Roberts, 2006) and follows the widely accepted problem-solving approach to teaching and learning found in agricultural education (Phipps & Osborne, 1988). Dyer and Williams (1997), in a synthesis of research on supervised agricultural experience in the United States, concluded that the teacher is central to the success of experience programs. Dyer and Williams also noted that employers can effectively help with programs such as internships. Preparing teachers to supervise programs and to work with potential employers to develop and enhance supervised experience programs in the agricultural technical schools of Egypt seems equally appropriate. Conducting further research in the area of preparing students for career success is a national priority in agricultural education in the U.S. and can be broadened to include international settings (Osborne, n.d.).

A productive agricultural economy relies upon a well prepared agricultural workforce (Samy, 2003). To address that concern, the Value-Chain Training Project in Egypt was developed as part of an ongoing initiative funded by the US Agency for International Development (USAID) through the Midwest Universities Consortium for International Activities, Inc. (MUCIA). The project is designed to improve the quality and effectiveness of educational programs in the Agricultural Technical Schools (ATS) of Upper Egypt, serving more than 100,000 students, to increase student employability and improve the agricultural sector of the Egyptian economy (Samy, 2003). The project includes three components: improving the learning environment, developing supervised internship/ownership programs, and enhancing career skill development.

This paper focuses on the supervised internship sector of the project.

The Agricultural Technical School system in Egypt includes 130 secondary schools located throughout the country. The schools, with average enrollments of more than 2,750 students and about 154 instructors each, were originally designed to prepare skilled workers for the agricultural economy of the country (Swanson, Cano, Samy, Hynes, & Swan, 2007). A dearth of suitable teaching materials, insufficient training of the teachers in student-centered instruction, and a lack of linkages with the agricultural industry led to the creation and funding of the Value-Chain Training Project, designed to improve the connection between ATS programs and the agricultural businesses and industries that the schools serve. The potential end result is an increase in the employability of ATS graduates through providing students with suitable internship experiences (MUCIA, n.d.; Barrick, Samy, Gunderson & Thoron, 2009). The work of this project focused on developing innovative expertise by introducing new ways of teaching and new content, namely student internships. The foundation for the work conducted for this part of the project was grounded in the theory of Teacher Adaptive Expertise (Hammerness et al., 2005). Teacher expertise is developed along two dimensions, namely efficiency and innovation. Expertise in efficiency leads to the ability to accomplish a task with little attention, while expertise in innovation leads to trying new things and changing current practices. Adaptive expertise includes efficiency and innovation. Periodic assessment of the new practice can identify additional training needs and assess the impact of the innovation.

Swanson et al. (2007) indicated that engaging ATS students in various practical training activities has not been a priority in

Egypt in the past, which led to the development and funding of the USAID project. In addition, ATS instructors often lacked the practical skills and experience that are needed by their students. If teachers can be better prepared to involve business and industry in providing decision making and hands-on experiences for students, both students and agricultural business will gain. Additionally, ATS instructors lack preparation in teaching a variety of agricultural skills, including agribusiness management. However, instructors were positive about their participation in training workshops (Thoron, Barrick, Roberts, & Samy, 2008). Agricultural science and technology is a primary driver of agricultural growth; it needs lots of well-educated people (von Braun, 2008).

The MUCIA project for ATS instructors (MUCIA, n.d.) provided for workshops offered to ATS instructors in 50 schools in Upper Egypt. Workshop leaders from the MUCIA team prepared the workshop materials and activities and then delivered the workshop to university faculty. Those faculty, in turn, taught the ATS instructors throughout the region. In order to provide evaluation feedback to the funding agency and to identify changes to be made in subsequent workshops, workshops should be evaluated (Ayers, 1989). Workshop evaluations provide guidance in developing additional short-term learning experiences for the participants, encourage the utilization of active learning, and meet the needs of the learners (Myers & Roberts, 2004).

If the Agricultural Technical Schools are designed to prepare society-ready graduates, then students must be prepared with skills that include real-world experiences. Teachers must be prepared to develop, coordinate and supervise those experiences in conjunction with agribusiness. In consideration of Finley and Price (1994) as well as suggestions by Knowles (1984), efforts by MUCIA instructors to facilitate workshops will lead

to better content understanding by Egyptian faculty. Workshops can be developed that will assist in providing the needed skills for teachers by preparing Egyptian faculty to offer educational experiences for ATS instructors beyond the scope of the funded project.

As a part of the second component of the Value-Chain Training Project (developing supervised internship/ownership programs), workshops were designed and delivered by faculty from the United States in cooperation with the MUCIA staff which made up the MUCIA team. Those workshops included content on experiential learning, supervised experiences and internships, from planning programs to assessing student learning. Concurrently, active learning strategies were demonstrated and utilized to assist ATS instructors in teaching students about internships as well as how to involve parents and the community in the internship programs. Headmasters and Ministry of Education personnel were also involved in the workshops.

The initial workshops followed a train-the-trainer process. The MUCIA team prepared materials for the workshops which were translated into Arabic. A set of three workshops was taught in July 2007. The first was taught by U.S. faculty to Egyptian faculty who would later serve as instructors of the workshop. The second was taught by U.S. faculty with the Egyptian faculty serving as translators; participants were ATS instructors. The third workshop was taught by Egyptian faculty, in Arabic, for a second group of ATS instructors. The U.S. faculty assisted with group discussions. The Egyptian faculty continued to offer additional workshops to ATS instructors throughout Upper Egypt after completion of the original training workshops.

The original workshops were evaluated at the conclusion of the session (Thoron, Barrick, Roberts & Samy, 2008). Subsequently, additional information was

collected from the ATS instructors who have been involved in the internship program, and additional workshops were offered based on the perceived needs of the ATS instructors. One year after the initial supervised experience/internship workshops, the knowledge of and ability to apply the competencies taught in the workshops were assessed. ATS instructors generally had acquired the necessary competence to guide their students, while also acknowledging the need for additional information for some areas of the program (Barrick, Samy, Roberts, Thoron & Easterly III, in press).

The success of introducing the program of student internships into the ATS programs eventually rests with the involvement and success of the key players: students, parents, teachers, headmasters and employers. One measure of success is the impact of the internship program as perceived by the key players. To what extent has the implementation of the internship programs affected the schools, the students, their families and the agribusiness community?

### **Purpose**

The purpose of this study was to gain a deeper understanding of the ATS internship program experiences as perceived by the five stakeholder groups: students, their parents, teachers, headmasters, and the employers of the students. The following questions guided this study.

1. What is the impact of the internship program as perceived by each of the five stakeholder groups?
2. How do stakeholders think the internship program could be more beneficial?
3. What is the perceived value of internships as identified by each group?

### **Methods**

The researchers engaged in a qualitative study involving thematic analysis

through a social constructionist theoretical perspective in order to determine how individuals involved in Egyptian ATS internships made sense out of the internship experience. The social constructionist lens allows for the formation of a shared reality through social interaction, and so the researchers were able to interpret the experiences shared by stakeholders through focus group discussion (Flick, 2006).

### *Participants*

The participants were purposively selected based upon the criterion of involvement in Egyptian ATS internships. In partnership with USAID, Egyptian ATSs with involvement in internships were selected, and convenience samples of students, parents, headmasters, teachers, and employers from the selected schools were requested. From four agricultural technical schools in Edfu, Benban, Bebe, and Wosta, 38 students, 3 employers, 5 parents, 27 teachers, and 2 headmasters agreed to participate in the study. Students had completed internships at various locations (farms and agribusinesses) and for various lengths (three months full-time to six months part-time). Three-month internships were full-time placements away from the home community; part-time internships were typically during part of or after the school day at a local farm or agribusiness.

### *Procedures*

Data collection consisted of semi-structured face-to-face focus groups, through moderators responsible for translation, for unspecified amounts of time until response saturation was reached. Each of the five participant groups was interviewed separately at two school sites. The group interaction in focus groups differentiates it from other methods of qualitative data collection (Morgan & Krueger, 1993) and allows individuals to engage in discussion “designed to obtain perceptions on a defined area of interest in a permissive and non-

threatening environment” (Krueger, 1988, p. 18). The researchers speak only English and the study participants primarily speak Arabic, thus requiring the use of translators who acted as focus group moderators. The researchers, prompting discussion through questions, facilitated the focus groups, and thus will be termed “Facilitator” for ease of understanding. All focus groups involved one facilitator, two moderators for translation (one asking questions to the group from the facilitator and one translating answers for those taking field notes), three individuals collecting field notes (referred to as observers/transcribers), and a group of participants. Groups of students, parents, teachers, employers, and headmasters were interviewed separately, and questions were designed specifically for each group based on input from experts in agricultural student internships. Due to the unique circumstances and complexity necessitated by the language barrier, Figure 1 provides a model of the focus group process utilized in this study.

All group interview transcriptions were coded for emerging themes based on the research questions. Lincoln and Guba (1985) propose that credibility, transferability, dependability, and confirmability can be utilized to evaluate the soundness of qualitative research. These criteria were established through the use of multiple moderators, observer/transcriber triangulation, source triangulation from focus groups conducted at two separate sites, rich descriptions of the context and study assumptions, and inquiry audit (Lincoln & Guba, 1985).

### Findings

Data collected by each of the three observer/transcribers was combined and divided into segments. Segments were then analyzed and categorized. An analysis of the data collected in this study resulted in the emergence of two themes and corresponding sub-themes:

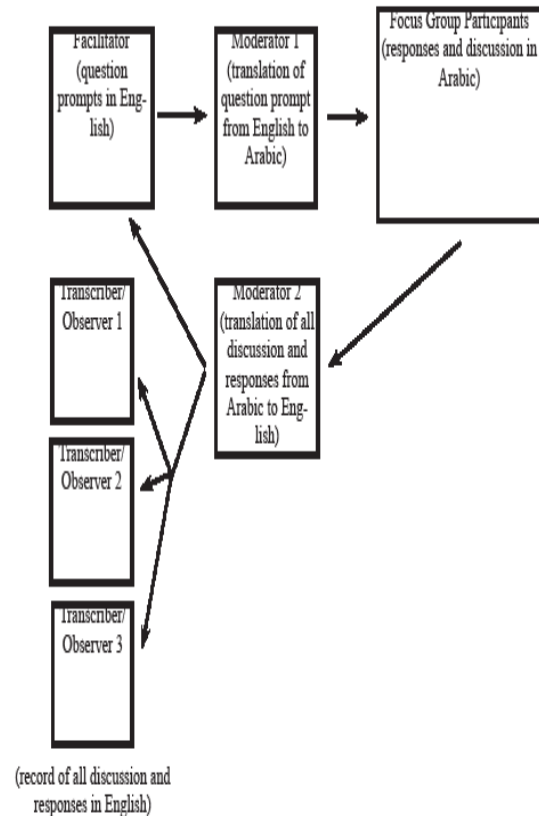


Figure 1. Focus group process.

1. Internships as a vehicle for long-term community improvement
  - a. Increased well-prepared workforce
  - b. Increased value in education
  - c. Responsible financing
  - d. Sustainability
2. Increase in school-home-community collaboration
  - a. Built relationships between teachers and employers
  - b. Internship knowledge brought home
  - c. Improved relationships between schools and families

**Long-term Community Improvement**

Through focus group responses, a major theme of the use of the internship program as a vehicle for long term community improvement emerged. Students, parents, teachers, employers, and headmasters of the four schools all projected that certain aspects of their communities, as well as their overall communities as a whole, would experience long-term improvement through: an increase in the number of people prepared to work in the agricultural industry; teachers, parents and students exhibiting an increased value in education; students and families making responsible financial decisions caused by the earning of money from internships; and the program’s projected ability to sustain itself, creating a perpetuating cycle of community improvement.

*Increased Well-Prepared Workforce*

An overarching theme that emerged from each of the focus groups is the role of internships as a vehicle for sustained community improvement. Internships not only provided students, parents, employers, teachers, and headmasters with specific benefits, but those benefits experienced by each group bled into one another to provide additional benefits to families, businesses, and schools that make up the communities. Students expressed improved employability skills, including self-confidence, communication skills, management skills, independence, presentation skills, practice in gaining trust from others through work, career planning, time management, language skills, and responsibility. Students explained that they wished they had improved language skills (specifically in English) and computer skills before participating in their internships. Employers also felt that students gained much needed employability skills. One employer explained that students originally lacked time management skills, which led to less trust and responsibility:

*The work day is 7:00 a.m. to 1:00 p.m., but they might show up at 8:00 a.m. and still expect to leave at 1:00 p.m. I wanted to teach them to come in on time and to be punctual.*

Another employer added to the need for students to gain employability skills, saying that he wished students had “come to work focused on work and put everything else aside.” Employers explained that they helped students improve these employability skills by giving them responsibility to create a sense of ownership. One employer said that he taught students to talk less and work more. Employers assigned students specific tasks and tried to make them independent as well as to think independently. Parents also expressed notable differences in their children, offering that they showed increased self-confidence, responsibility and a stronger personality. Teachers also noted improved communication skills and increased self confidence in their students. Headmasters further solidified the notion of students’ improved employability skills, claiming that students exhibit greater self-confidence, have more hope for the future, display a feeling of empowerment, and are able to take on greater responsibility. They identified one of the benefits of internships as the increase in self-value ATS students exhibit compared to those at other schools.

In addition to improved employability skills, each focus group noted the effect of internships on students’ technical skills. Students stated that they gained technical skills during their internships, and they wished that they had more technical and field work experience before they began their internships. Students also felt they lacked an adequate understanding of natural resources before they participated in their internships, and they were able to use environmental resources more wisely after their internships. Students expressed greater career focus, centering around their internship fields. They explained that internships gave them

hands-on experience that will help them gain employment in their internship fields. Some received a certificate from their employers that can be used when applying for jobs. Many students expressed plans for pursuing careers in their internship fields upon graduation, and some already hold jobs in areas in which they had an internship.

Employers also claimed the students gained valuable technical skills that will lead to a better prepared workforce; one employer stated that he has already hired three of the six students who have interned with him because the students are literate, eager to learn, and quickly became skilled employees. Employers stated that while the students were willing and able to learn quickly, they had little technical experience before their internships, and that they needed to start at the beginning with practices on the farm. One employer added to this by explaining that he learned not to depend on the school for technical training of the students; he has learned to assume that all technical training will be done on the farm. Another employer noted that he would like to see students come into the internship with more technical knowledge, using the recognition of plant diseases as an example. With regard to providing the technical experience that students gained, one employer had an employee work with the students until they knew the skill and were able to work independently. Another employer encouraged quality and efficiency in field work through the development of a productivity rate. He explained, "We want 20 hive checks in a set amount of time. Then we give the students feedback on their performance. We reward their work. Good work gets a reward."

Parents also noted the improvement in the technical skills of their children. One parent claimed that he was more comfortable with the idea of his son participating in an internship because he thought the experience would improve his son's technical skills. Teachers also

expressed a feeling of improved technical skills. One teacher felt that providing technical experience was the primary role of internships, while classroom instruction was to provide theory. Teachers also felt that internships helped students get jobs. Headmasters stated that students receive up-to-date technical knowledge and more skills from their internships, which leads to higher wages and a wider range of employment opportunities.

#### *Increased Value in Education*

In addition to increased employability and technical skills, focus groups consistently saw both students and teachers exhibit an increased value in education. As students learned more about the skills needed for career success, they also experienced academic benefits and expressed a desire to further increase their efforts and achievement in school. Students claimed that they received better grades after returning to school upon completion of their internships, and they now have a desire to apply knowledge they learned during their internships to their school programs. Students expressed the relevance they now view that scholastics hold in their lives through the competencies they wished they had prior to their internship, such as technical skills, language skills, fluency in English, computer skills, and a better understanding of natural resources. The new-found value of school in the students' lives was also expressed by the parents. One parent stated that his student could not afford to continue to attend school before his internship, but upon completion of the internship, he decided to spend his internship money on returning to school. Teachers also noted that students returned from their internships as "better students," both regarding grades and behavior. They explained that students are more self-confident and more willing to complete work at school, as well as help teach skills they learned during their internships to their

classmates. Headmasters also stated that students participate more in tending to the school farm and have better attendance and higher grades upon completion of their internships.

An increase in the value of education also emerged in the teachers. Teachers shared that they now make efforts to alter their teaching techniques to include active learning strategies upon seeing how much the students learned through active participation in practices at their internships. Headmasters also expressed that they noticed teachers developing new ways to teach so students could learn more technical skills in schools. They claimed that teachers were adopting new teaching practices active learning strategies. One headmaster stated that using active learning strategies was increasing teacher job satisfaction:

*Our teachers are having to use less effort to teach the students because the students are now more involved in their own learning.*

Headmasters explained that teachers are also more engaged in professional development. After attending workshops on using active learning strategies, they give workshops to other teachers. Headmasters would like to see the internship program incorporate more workshops for teachers so they can learn more about active learning strategies and have access to the newest information regarding agricultural science. However, they also stated a need for these workshops to be held in locations where teachers can have the opportunity to learn about new technology as well.

#### *Responsible Financing*

Benefits from internships were not limited to employability and academics. As students gained their own money, improvements in finances and financial management were experienced by students and their families. Students reported the internships gave them an increase in income, and they commonly used sound financial

management decisions when spending their money. Some students spent their new income on starting up ownership projects in the area of their internship, renting land, and/or engaging in new training experiences. One student reported that she began her own ownership project in perfume production after she completed an internship in the same area. Others stated that they shared their income with their families. Still others used their income toward academics, paying for school expenses, taking workshops to improve skills, engaging in career development, and saving it to further their education.

Parents claimed that the money the students earned in the internships made the students more responsible and grow as people. One parent said that before his daughter participated in an internship, she spent money unwisely: "Now she understands the value of money and uses it much more wisely." Headmasters also feel that internships have improved the students' financial management skills. While they noted that students had more income due to their internships, they also stated that students were not spending their money in coffee shops socializing, as they used to do before they participated in the internship experiences.

#### *Sustainability of Internship Program*

Each focus group expressed feelings that indicate an overall desire to continue the internship program, as well as provided reasoning for its sustainability. Several students noted that they were able to utilize the knowledge and income received in their internships to begin ownership projects, which allowed the students' initial internship money to yield future income, creating more family sustainability. Employers stated that they wish more students would participate in internships because they have a need for more literate employees. Additionally, they expressed satisfaction in regard to the amount they

paid students compared to the amount and quality of the work they received. When asked if they would recommend participation in the internship program to other business owners, all of the focus group members stated that they had already recommended the program to others. Employers said that when speaking to other business owners, they direct the owners to contact the school for information, and they recommend specific students to participate in the internships based on their internship experiences with these students.

Parents wanted to see the internship program not only continue but to expand as well. Requests for expansion included increasing the number of internships offered to each student, incorporating social aspects into the internship, offering a longer, strictly work-focused internship for graduates, and to extend the internship program to include all students. Parents stated that their students' experiences have led them to recommend the program to other parents of ATS students. Perhaps most indicative of the parents' motives behind the internship program's continuation was one parent's response:

"We want it to continue, and to extend [the internship] to have all students participate. The improvement of technical and social skills will, in time, improve the community."

Headmasters expressed observations that they feel will allow the internship program to sustain itself. They stated that they have noticed parents competing to get their students accepted into internship positions. Relationships built between the ATS and businesses, business owners accepting the program as a part of their business operation, and the observed support of the General Manager for Agricultural Education all lead headmasters to believe that the internship program will be sustainable upon completion of the current MUCIA project. Lastly, sustainability of the program is expected by headmasters because

the benefits of the internship have not been attained in its absence; the headmasters noted that some students felt they did not need an internship, and instead went directly to the businesses for employment. The students returned to the school asking to participate in internships because they received low pay, poor food, and overall dissatisfactory experiences without the support and assistance of the ATS provided through the internship program.

### **Increase in School-Home-Community Collaboration**

An increase in collaboration among schools, families, and communities also emerged as a theme running among each of the focus groups. As stated previously, teachers hold a greater value for education, which leads to a greater commitment on the teachers' part to collaborate with families and businesses in an effort to better educate students. Collaboration among these three entities has resulted in the development of relationships between the teachers and employers, internship knowledge improving family life, and increased trust among families, schools, and businesses.

#### *Built Relationships between Teachers and Employers*

The logistics of successful internships, including employer participation and appropriate student internship matching, were determined through communication between teachers and employers, which led to better relationships between the schools and community businesses over time. Employers stated that the teachers supplied employers with information about specific students and discussed technical skills needed for the particular internship. Teachers viewed their roles differently in the internship program, although all expressed roles that involve building relationships between the school and businesses. Stated roles included placement on the farms, surveying potential farms, training students

to prepare for the internships, visiting students periodically during their internships, and selecting students for participation in the internship program. Both teachers and headmasters specifically noted that they see the improved connections with community businesses as a result of the internship program that directly benefits schools. One headmaster also explained that the community now has more involvement in the school:

*The community – both families and businesses – are more involved in the school. More students have jobs and less spare time. They can't hang out in coffee shops and get into trouble. Fewer bad things are happening in the community.*

Headmasters elaborated on this relationship between the school and local businesses by explaining the benefits both receive. They stated that the students are sent to the businesses to learn the newest skills and earn income in the process. Businesses, in turn, receive cheap skilled labor and therefore experience an increase in profit. Headmasters stated that the mutual benefits resulting from this relationship allow the businesses to have more trust in the schools, and the constantly improving relationship will allow for the internship program to be sustained.

#### *Internship Knowledge Brought Home*

When first participating in the internships, several students noted that they were initially challenged by the work expected of them. They did not know about the work involved and, as stated earlier, they lacked the technical skills necessary to complete the work. However, these students also stated that they only felt incapable initially and were able to learn the skills quickly. Parents noted that their children brought new knowledge back home after their internships. One parent stated that his son returned home and implemented the knowledge he had learned about a state-of-

the-art irrigation system on the family land, which in turn increased the farm's efficiency.

Employers also helped skills learned in the internship transfer to the students' families by encouraging parents to learn the skills their children were picking up. This communication between employers and parents helped the parents feel more at ease about their decisions to allow their children to participate in the internships. Headmasters noted that the internships were providing families with both income and improvement on family farms, as well as providing opportunities for students to improve their behavior while at home. Headmasters noted that students had less free time due to their new jobs as well as a greater understanding for the value of earned money.

#### *Improved Relationships between School and Families*

Students noted that, originally, their parents were hesitant about allowing them to participate in the internship program. They explained that parental refusal stemmed from the length of time they would be away from their families for national internships; the 30-45 days was just too long to be gone.

Additionally, some parents of female children initially refused to allow their daughters to participate due to the societal restrictions placed on females. When learning about the internship program, parents were given information from the school through both their children bringing information home and through communication with teachers. As the parents became interested in the program, they visited the school and spoke with teachers, who encouraged parents to help their children learn technical skills. One parent described how collaboration between the school and home began:

*I heard about [the internship program] from my daughter, who got the information from the school.*

*I was worried about my daughter working away from the family, but I visited the school. I am glad she participated – I even cultivated flowers for her to start her own perfume project after she finished her internship [in perfume production].*

Another parent expressed concern for his son's safety, but stated that the teacher helped convince him that the internship experience is a good one and that his child was safe. The benefits of income and new knowledge to be applied after the students returned home helped parents see that the teachers had the best interests of the children in mind, further developing a trusting relationship between the school and families in the community.

### **Recommendations and Implications**

The stakeholder groups on the ATS internship programs identified numerous benefits of the program in terms of preparing workforce-ready graduates. The ATS internship programs should be continued and expanded to involve additional schools and more students. A closer connection between what is taught in the schools and what is expected of internship participants is also needed.

Students and parents indicated that the students who participated in the internship program now have disposable income which they had never had previously. While there was indication that the students were making decisions regarding the use of their money, workshops should be developed for ATS instructors so that they can incorporate personal financial planning and small business finance and management competencies into the curriculum.

An important aspect of the internship program was the relationship among the students, parents and employers. Additional work in this area may be warranted in order to create a stronger program and to assure

additional participants, especially parents and employers, that the internship program adds value to the school, the community and the student participants.

Finally, the internship program for agricultural students in Egypt appears to have been implemented successfully. This could be a model for other countries that desire to improve the agricultural economy through a well-trained and productive workforce.

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**Developing Strong International Agricultural Education Programs by Understanding Cognition**

**Alexa J. Lamm**

University of Florida  
PO Box 110540  
Gainesville, FL 32611-0540  
Ph: 352-273-2614  
Email: alamm@ufl.edu

**Amy Harder**

University of Florida  
Email: amharder@ufl.edu

**Tracy Irani**

University of Florida  
Email: irani@ufl.edu

**T. Grady Roberts**

University of Florida  
Email: groberts@ufl.edu

**Lori Unruh Snyder**

Purdue University  
915 West State Street  
West Lafayette, IN 47907-2054  
Ph: 765-494-4773  
Email: lusnyder@purdue.edu

**Abstract**

*International experiences provide culturally rich, complex situations for learners to process in both the affective and cognitive domains. By better understanding how learners process the information they receive in international settings, educators can develop quality international programs that encourage learners to more fully develop their cognitive abilities. The purpose of this study was to explore the cognitive relationships between participants' learning styles, problem solving styles, and critical thinking dispositions in an international setting. Relationships were found between learning style preferences and critical thinking disposition, and learning style preferences and problem solving style. Given these results, instructors working in international settings should expect students to differ in terms of their cognitive processes and associated cognitive styles such as learning style. Instructors should be prepared to address these differences in style as they would in a traditional instructional setting. Further, instructors can use assessment tools to group students to work together most effectively and/or to achieve diversity in their thinking styles and approaches to solving problems.*

**Keywords:** Teaching and learning, Instructional design and delivery, Learner characteristics, Learning theory

### Introduction

International experiences, such as study abroad opportunities, provide culturally rich, complex situations for learners to process (Bruening & Frick, 2004; Klein & Lawver, 2007). Learning can be assessed within both the affective and cognitive domains. The affective domain refers to personal and intercultural learning (Krathwohl, Bloom, & Masia, 1973). The substantial documentation of gains in personal and intercultural development while studying abroad suggests these are common objectives of this type of experience. In contrast, the cognitive domain refers to increased knowledge and processing skills developed through the learning process (Bloom, Englehart, Furst, Hill, & Krathwohl, 1956). Very little research has been reported on what effects a study abroad experience may have on the cognitive processing students undergo while in the socially complex situations introduced in study abroad settings. By better understanding how learners process the information they receive, educators can develop quality programs that encourage learners to more fully develop their cognitive abilities.

One of the most important of those cognitive abilities is critical thinking. Critical thinking has been defined as having both skills and disposition dimensions. An often cited definition of critical thinking skill developed by an international panel of experts is: "We understand critical thinking to be purposeful, self-regulatory judgment that results in interpretation, analysis, evaluation, and inference, as well as explanation of the evidential, conceptual, methodological, criteriological, or contextual considerations upon which that judgment is based" (Facione, 1990, p. 2). Critical thinking disposition, the tendency or desire to apply one's thinking skills, has been correlated with intelligence as well as problem solving (Friedel, Irani, Rhoades, Fuhrman, & Gallo, 2008). The lack of

research regarding the role of study abroad experiences in critical thinking development indicates educators are likely missing the opportunity to integrate this important skill set into their planned objectives.

### Theoretical/Conceptual Framework/Review of Literature

The conceptual framework for this study utilized a conceptual model introduced by Lamm, Rhoades, Snyder, Irani, Roberts, and Brendemuhl (2011) describing the relationships between learning style, critical thinking disposition, and problem solving (see Figure 1). Based on the results of an exploratory study, Lamm et al. (2011) suggested that educators could plan curriculum to enhance critical thinking by considering the students' learning styles (Kolb, 1984; Kolb, 2007) and problem solving styles (Kirton, 2003). This article describes an effort to replicate their findings.

Learning style is defined by the experiential learning theory of development (Kolb, 1984) as an individual's preferred method of gaining knowledge. Kolb (1984) posited that styles of learners separate into four categories: accommodating, assimilating, converging, and diverging. The four styles were developed by assessing the level at which a learner naturally uses specific tendencies while learning. They include reflective observation (reflecting), abstract conceptualization (thinking), active experimentation (doing), and concrete experience (experiencing) (Kolb, 2007).

Typical characteristics associated with each of the four styles were also identified (Kolb, 2007). Individuals with a preference for doing and experiencing are considered accommodators. These individuals put practiced ideas into action, find multiple uses for information, and are easily adaptive. Individuals with a preference for reflection and thinking are considered assimilators. Assimilators look at learning as a gateway to larger ideas and prefer to combine learned information to

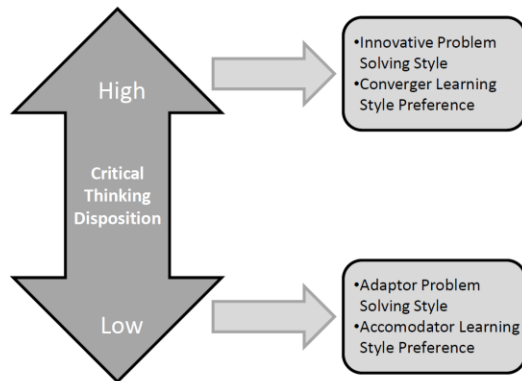


Figure 1. Cognitive relationships conceptual model (Lamm et al., 2011)

create models and theories. Convergers prefer doing and thinking, collecting information to solve problems and prefer to reach a solution by bringing ideas together. Divergers prefer experiencing and reflecting. Divergers view situations from multiple perspectives looking for alternative solutions by diverging from traditional patterns.

Problem solving is defined as an ability to “solve critical, complex problems in challenging environments” (Kirton, 2003, p. 1). The world is ever-changing, therefore problem solving is an essential part of human survival and is naturally innate within each individual (Kirton, 2003). However, each individual approaches problem solving differently. Adaption-Innovation theory (Kirton, 2003) established a continuum between levels of adaption and innovation that represent an individual’s preferred cognitive problem solving style. Adaptive individuals narrowly focus their attention to solving problems within defined boundaries while innovative individuals approach problems from a larger perspective, stepping outside of boundaries or defying rules to establish multiple solutions to the same problem. Three constructs comprise problem solving style: sufficiency of originality (a preference for forming solutions), efficiency (a preference to use strategy), and rule/group conformity (a preference for structure) (Kirton, 2003).

Critical thinking has been recognized as one of the most important cognitive traits leading to an individual’s success (Irani et al., 2007). Three constructs have been used to describe critical thinking disposition: engagement, cognitive maturity, and innovativeness (Irani et al., 2007). High engagement signifies an ability to anticipate situations, look for opportunities to use reasoning skills, and confidence in reasoning, decision making, and problem solving abilities (Irani et al., 2007). High cognitive maturity signifies knowledge of predisposition prior to making decisions, recognition of the environment’s effect on opinions, and openness to the ideas of others. High innovativeness signifies a tendency to look for new knowledge, engage in new challenges, seek more knowledge, and an ability to question present beliefs, adjusting them based on new knowledge or experience (Irani et al., 2007).

The cognitive relationships conceptual model (see Figure 1) explains the theoretical relationships between these three cognitive styles. The research used to create this model showed those with higher critical thinking disposition scores will most likely be innovators, while those with a lower critical thinking disposition score will most likely be adaptors (Lamm et al., 2011). Other studies have shown creative thinking may be what establishes the relationship between critical thinking disposition and

problem solving style (Maltzman, 1960). There is some debate as to whether creative thinking and problem solving are significantly different concepts. Problem solving tendency does not define whether or not an individual is creative, but examines the differences in the way the individual expresses his/her creativity (Kirton, 2003).

Lamm et al. (2011) also found that individuals with a higher critical thinking disposition score were also correlated to those exhibiting a converger preference when learning, while those with a lower critical thinking disposition score were correlated with those exhibiting accommodator preferences while learning. These relationships were not supported by previous literature. Rudd, Baker, and Hoover (2000) reported no significant correlation between learning style and critical thinking disposition while studying this relationship in undergraduate students. Torres and Cano (1995) discovered learning style only accounted for 9% of the variance in critical thinking ability and expressed the need for further study in this area.

In the conceptual model being used for this study, problem solving style and learning style are not correlated and are therefore only connected through critical thinking disposition (Lamm et al., 2011). Past studies have shown reflection was associated with adaptors while action was associated with innovators (Kirton, 2003). If this is shown to be true, adaptors will prefer linear learning modes, while innovators will prefer hands on experiential learning techniques (Kirton, 2003), serving to change this portion of the conceptual model.

### **Purpose and Objectives**

The purpose of this study was to explore the cognitive relationships conceptual model by describing the relationships between participants' learning styles, problem solving styles, and critical thinking dispositions in a study abroad setting. The research objectives were to (a)

describe each participant's learning style, problem solving style, and critical thinking disposition, and (b) describe the relationships between the participants' learning style, problem solving style, and critical thinking disposition.

### **Methods**

This study is correlational and descriptive in nature. The population was made up of students participating in a three week study abroad course conducted during the summer of 2010. These participants were chosen because study abroad courses are naturally designed to remove individuals from their typical comfort zone. Individuals in these settings find themselves in unfamiliar surroundings, thereby activating a coping behavior, forcing them to rely on their preferred cognitive style when performing a requested behavior (Kirton, 2003). The course included a problem solving activity where participants were expected to create and market a naturally grown agricultural product to a Latin American audience. The activity was designed to be experiential and to activate the participants' problem solving style while working in groups. The unfamiliar surroundings, problem solving activity, and experiential learning techniques created an environment designed to encourage the use of all three cognitive areas studied. To conduct the study, a census of the 16 college age students enrolled in the course was conducted. Due to this small size, any results cannot be extrapolated beyond the limits of the environment described within the study.

To collect data, participants met with one of the researchers prior to the three week course. At this time, participants were asked to complete the Kolb Learning Style Inventory (LSI; Kolb, 2007). Participants were also asked to complete Kirton's Adaption-Innovation Inventory (KAI; Kirton, 1976) to determine their problem solving style. To gauge critical thinking

disposition, the University of Florida Engagement, Maturity, and Innovativeness test (UF-EMI; Moore, Rudd, & Pennfield, 2002) was used. The researcher was able to use an online design due to the target population's access to the Internet (Dillman, Smyth, & Christian, 2008). Demographic data was also collected online for descriptive purposes.

### *Instrumentation*

Kolb's (2007) LSI was used to determine learning style. The LSI was a 12-item instrument which separates learning style preferences into four categories: concrete experience (CE), active experimentation (AE), reflective observation (RO), and abstract conceptualization (AC). Category scores can range from 12 to 48, with all four categories combining to total 120. Higher scores within a specific category signify a preference for that method of learning. A coefficient alpha level of reliability for the LSI ranging from .73 to .86 has been established by multiple research projects representing a variety of disciplines (Ruble & Stout, 1990).

Problem solving style was established by using the KAI. The KAI was a 32-item continuum based instrument of which totaled responses create an overall score ranging from 32 to 160 (Kirton, 2003). Scores below 95 points were considered adaptors and a score above 95 were considered innovators. Three constructs make up the KAI: sufficiency of originality (a preference for forming solutions), efficiency (a preference to use strategy), and rule/group conformity (a preference for structure). A high level of reliability and validity for this instrument has been established through multiple research studies (Kirton, 2003) with Cronbach's alpha coefficients ranging from .80 to .90 (Taylor, 1989).

Critical thinking disposition was assessed through the UF-EMI. The UF-EMI was made up of 26 Likert-type items

measuring three constructs: engagement, cognitive maturity, and innovativeness (Irani et al., 2007). All 26 item scores are summed to create a total score which can range from 26 to 130. A low score indicates a low critical thinking disposition while a high score indicates a high critical thinking disposition. The scale developers report a Cronbach's alpha coefficient of .94 for the UF-EMI (Irani et al., 2007). Reliability is further established with Cronbach's alpha coefficients for the three constructs reported as: engagement, .91; cognitive maturity, .79; and innovativeness, .80.

### *Data Analysis*

Scores for all three inventories, including construct scores, were coded for analysis using PASW18. Descriptive statistics were used to report demographic characteristics and describe each participant's learning style, problem solving style, and critical thinking disposition. Pearson's product-moment correlation coefficient using Davis' (1971) convention was calculated to describe relationships. Relationship magnitude is noted by Davis as  $.01 \geq R \geq .09 =$  Negligible,  $.10 \geq R \geq .29 =$  Low,  $.30 \geq R \geq .49 =$  Moderate,  $.50 \geq R \geq .69 =$  Substantial,  $R \geq .70 =$  Very Strong. The proportion of the variation accounted for by the relationship is noted by  $R^2$ .

### **Results**

Sixteen participants were recruited to take part in the study representing University of Florida, Purdue University, and Cal State University at Pomona. Seven of the participants were female and nine were male. Their ages ranged from 20 to 28 years. Fifteen of the participants were undergraduate students and one was a graduate student. Thirteen of the participants were White (non-Hispanic), one was Hispanic, one was Black (non-Hispanic), and one reported "other" as their ethnicity.

*Cognitive Styles*

The participants' preferred learning styles were measured by the LSI (see Table 1). Each of the four categories was

represented by the participants. Seven participants were identified as accommodating, two as assimilating, three as converging, and four as diverging.

Table 1  
*Participants' Learning Style Preferences*

Participant #	Inventory	AC	AE	CE	RO
2	Accommodating	25	43	21	31
3	Accommodating	27	39	34	20
5	Accommodating	26	43	25	26
6	Accommodating	20	45	30	25
9	Accommodating	18	46	30	26
10	Accommodating	31	41	28	20
11	Accommodating	23	30	44	23
1	Assimilating	35	27	19	39
13	Assimilating	47	23	29	21
8	Converging	42	32	23	23
14	Converging	34	37	18	31
15	Converging	43	31	29	17
4	Diverging	23	41	21	35
7	Diverging	31	31	30	28
12	Diverging	27	33	30	30
16	Diverging	17	38	32	33

*Note.* AC = Abstract Conceptualization, AE = Active Experimentation, CE = Concrete Experience, RO = Reflective Observation.

Problem solving style was measured by the KAI inventory (see Table 2). Eight

participants were identified as innovators and eight as adaptors.

Table 2

*Participant's Problem Solving Style*

Participant #	Inventory	SO	E	R	Total Score
15	Innovator	50	23	47	120
13	Innovator	47	24	48	119
8	Innovator	54	19	41	114
2	Innovator	53	16	42	111
10	Innovator	51	18	41	110
6	Innovator	52	23	27	102
9	Innovator	49	18	34	101
12	Innovator	45	13	36	94
14	Adaptor	44	9	37	90
5	Adaptor	43	14	30	87
3	Adaptor	49	16	29	84
11	Adaptor	41	8	35	84
4	Adaptor	42	15	26	83
7	Adaptor	46	16	21	83
16	Adaptor	32	23	20	75
1	Adaptor	29	16	24	70

*Note.* SO = Sufficiency of Originality, E = Efficiency, R = Rule/Group Conformity.

Participants' critical thinking dispositions were measured by the UF-EMI inventory (see Table 3). Participant scores

reflect a range of critical thinking disposition scores from 90 to 121.

Table 3

*Participant's Critical Thinking Disposition*

Participant #	Engagement	Cognitive Maturity	Innovativeness	Total Score
10	40	39	32	121
8	42	35	33	120
5	41	34	30	114
6	37	33	31	109
9	39	31	30	109
14	38	29	33	109
7	35	33	31	108
2	37	32	27	104
11	37	29	29	103
3	40	27	28	102
15	31	32	28	99
12	34	30	25	96
4	33	27	28	94
1	30	32	26	94
16	29	32	25	93
13	31	23	28	90

*Relationships between Learning Style and Critical Thinking Disposition*

When LSI preferences are viewed in comparison to the group average scores on the UF-EMI for each preference, those exhibiting an accommodating ( $M = 108.86$ ,  $SD = 6.82$ ) or converging ( $M = 109.33$ ,  $SD = 10.50$ ) learning style had a high critical

thinking disposition score (see Table 4). Those exhibiting either an assimilating ( $M = 92.00$ ,  $SD = 2.83$ ) or diverging ( $M = 97.75$ ,  $SD = 6.95$ ) learning style had lower total critical thinking disposition scores (UF-EMI).

Table 4  
*Learning Style Preference Comparisons with Problem Solving and Critical Thinking Scores*

LS Preference	UF-EMI Score		KAI Score	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Accommodating	108.86	6.82	97.00	11.86
Assimilating	92.00	2.83	94.50	34.65
Converging	109.33	10.50	108.00	15.88
Diverging	97.75	6.95	83.75	7.81

*Note.* LS = Learning Style, UF-EMI = Engagement, Maturity, and Innovativeness Test, KAI = Kirton's Adaption-Innovation Inventory.

Two of the constructs within the LSI had moderate correlations to the overall UF-EMI score (see Table 5). The active experimentation (AE) construct had a moderate positive correlation ( $R = .43$ ,  $R^2 = .18$ ) and the reflective observation (RO) construct had a moderate negative correlation ( $R = -.37$ ,  $R^2 = .14$ ) to the overall UF-EMI score. In addition, the active experimentation (AE) construct within the

LSI had a substantial positive correlation ( $R = .50$ ) with the engagement construct within the UF-EMI explaining a quarter of the variance ( $R^2 = .25$ ) and a moderate positive correlation ( $R = .35$ ,  $R^2 = .12$ ) with the cognitive maturity construct within the UF-EMI. The RO construct within the LSI also had moderate negative correlations with the engagement construct ( $R = -.38$ ,  $R^2 = .14$ ) and innovativeness construct ( $R = -.39$ ,  $R^2 = .15$ ) within the UF-EMI.

Table 5  
*Correlations between Learning Style Constructs and Critical Thinking Disposition*

	AC	AE	RO	CE
Overall UF-EMI	-.02	.43	-.37	-.09
Cognitive Maturity	-.12	.35	-.07	-.17
Innovativeness	.21	.21	-.38	-.15
Engagement	-.13	.50	-.39	.02

*Note.* AC = Abstract Conceptualization, AE = Active Experimentation, RO = Reflective Observation, CE = Concrete Experience.

*Relationships between Learning Style and Problem Solving Style*

Learning style preferences were viewed in comparison to mean scores on the KAI for each preference (see Table 4). Individuals exhibiting a diverging learning style tended to have a low problem solving score (KAI) ( $M = 83.75, SD = 7.81$ ) signifying an adaptor preference. Those with a converging learning style preference exhibited a high KAI score ( $M = 108.00, SD = 15.88$ ) signifying an innovator preference. Individuals exhibiting accommodator ( $M = 97.00, SD = 11.86$ ) or assimilator preferences ( $M = 94.50, SD = 34.65$ ) had average KAI scores, placing them in the center of the KAI measurement scale.

The RO construct within the LSI had a substantial negative correlation to the overall KAI score ( $R = -.66, R^2 = .43$ ) explaining almost half of the effect (see Table 6). The RO construct was also substantially negatively correlated ( $R = -.67, R^2 = .45$ ) to the sufficiency of originality (SO) construct and the rule group conformity (RG) construct ( $R = -.59, R^2 = .35$ ). In addition, the abstract conceptualization construct within the LSI had a substantial positive correlation ( $R = .62$ ) with the RG construct within the KAI explaining over a third of the variance ( $R^2 = .38$ ). Lastly, the active experimentation construct within the LSI also had a moderate positive correlation ( $R = .30, R^2 = .09$ ) to the SO construct within the KAI.

Table 6  
*Correlations between Learning Style and Problem Solving Style*

	Overall KAI	SO	E	RG
Active Experimentation	-.03	.30	-.03	-.23
Abstract Conceptualization	.51	.20	.22	.62
Reflective Observation	-.66	-.67	-.29	-.59
Concrete Experience	-.06	.03	.00	-.05

*Note.* SO = Sufficiency of Originality, E = Efficiency, RG = Rule/Group Conformity.

*Relationships between Problem Solving Style and Critical Thinking Disposition*

Problem solving style was viewed in comparison to the mean critical thinking disposition scores for each preference. The innovator average score ( $M = 106.00, SD = 11.01$ ) and adaptor average scores ( $M = 102.1, SD = 7.92$ ) were similar. When tested there was a non-significant ( $t = .81, p = .43$ ) difference between average critical thinking disposition scores for the two groups based on a level of significance set *a priori* at .05.

There were substantial correlations between the constructs making up the participants' critical thinking disposition and their problem solving style (see Table 7).

The overall KAI score only had a low positive correlation ( $R = .28$ ) with the overall UF-EMI score accounting for a small amount of the effect ( $R^2 = .08$ ). The SO construct within the KAI had substantial positive correlations ( $R = .56, R^2 = .31$ ) with the overall UF-EMI score, the innovativeness construct within the UF-EMI ( $R = .53, R^2 = .28$ ), and the engagement construct within the UF-EMI ( $R = .61, R^2 = .37$ ). The efficiency construct within the KAI also had a moderate negative correlation with the engagement construct within the UF-EMI ( $R = -.36, R^2 = .13$ ).

Table 7  
*Correlations between Problem Solving Style and Critical Thinking Disposition*

	Overall KAI	SO	E	RG
Overall UF-EMI	.28	.56	-.16	.15
Cognitive Maturity	.10	.17	.08	-.08
Innovativeness	.31	.53	-.14	.19
Engagement	.21	.61	-.36	.17

*Note.* SO = Sufficiency of Originality, E = Efficiency, RG = Rule/Group Conformity.

*Comparing Critical Thinking Disposition, Problem Solving Style, and Learning Style*

When individual participant scores on both the UF-EMI and the KAI are compared graphically by their individual learning style, patterns begin to emerge. Figure 2 shows individuals with a converging learning style exhibit higher critical thinking scores (UF-EMI) and higher problem solving scores (KAI) than their

peers. In addition, Figure 2 also shows individuals with a diverging learning style exhibit lower critical thinking scores and lower problem solving scores than their peers. Individuals with assimilating learning styles exhibit low critical thinking scores (UF-EMI) but vary widely on problem solving score (KAI) and individuals with an accommodating learning style are well distributed across the median of both the UF-EMI and KAI distributions.

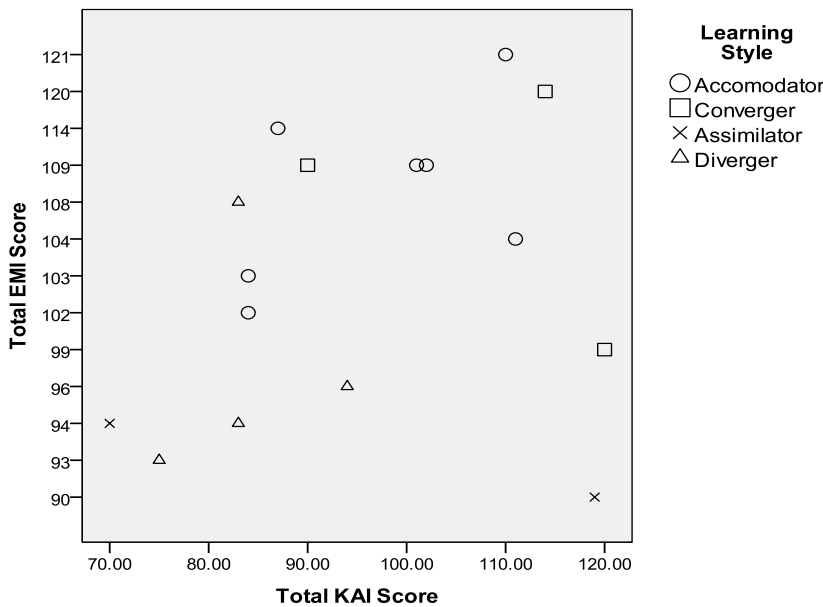


Figure 2. Comparison of critical thinking disposition and problem solving style by learning style.

### Conclusions

The purpose of this study was to explore the cognitive relationships conceptual model (Lamm et al., 2011) by describing the relationships between participants' learning styles, problem solving styles, and critical thinking dispositions in a study abroad setting. The students in the population represented each of the learning styles consistent with Kolb's (1984) original classification of learning styles. The accommodating learning style was most prevalent, while there were few assimilators. The population in this study differed from that in the Lamm et al. (2011) study, which had the greatest number of students identifying with the assimilating and diverging learning styles. Equal proportions of students in this study were identified as adaptors and innovators. Despite this distribution, all students tended towards the upper range of critical thinking dispositions ( $M = 104.06$ ). This contrasts the cognitive relationships conceptual model (Lamm et al., 2011) which links adaptor status with a low critical thinking disposition. In this case, the adaptors' average UF-EMI scores were not lower than the innovators' average UF-EMI score. However, since the mean for these students was higher than the average population mean on the UF-EMI this may not be an accurate representation of this relationship.

A visual comparison of the participants' learning styles and critical thinking dispositions showed evidence of relationships between learning styles and critical thinking. The statistical analysis showed active experimentation and reflective observation learning style preferences were related to the respondents' overall UF-EMI scores, and therefore to critical thinking disposition. More specifically, the active experimentation preference was related to the engagement and cognitive maturity constructs while the reflective observation preference was related to engagement and innovativeness. Overall,

the study showed that individuals with a preference for "doing" were more likely to have a "high" critical thinking disposition.

Unlike Rudd et al. (2000), Lamm et al. (2011) found learning style to be correlated with critical thinking disposition. However, Lamm et al. (2011) documented a negative relationship between active experimentation and overall UF-EMI, while this study found a positive relationship. Lamm et al. (2011) did not find a relationship between reflective observation and overall UF-EMI score or the UF-EMI constructs while this study did. Given the conflicting results, more research is needed to understand the relationships between learning style and critical thinking disposition.

Only one relationship was visually evident between problem solving style and learning style; that relationship was between a diverging preference and an adaptor approach to problem solving. Lamm et al. (2011) did not find any relationships between problem solving style and learning style. The statistical analysis for this study showed a relationship between problem solving style and the reflective observation preference for learning. Specifically, individuals with high reflective observation scores had lower sufficiency of originality scores and rule/group conformity scores which led to their conceptualization as adaptors. It can be concluded that a preference for learning by watching – a characteristic of the diverging learning style – is correlated with an adaptor problem solving style.

Two additional relationships existed between learning style preferences and problem solving style constructs. Positive relationships existed between abstract conceptualization and rule/group conformity, and active experimentation and sufficiency of originality. Although the visual analysis of this study's data set did not support a likely relationship between the converging learning style and problem

solving style, the significance of abstract conceptualization and active experimentation with components of the KAI suggests that a larger sample may show a relationship.

All students in this study tended towards the higher end of critical thinking disposition scores despite an equal proportion of innovators and adaptors in the population. A closer look at the data showed a low relationship between problem solving style and critical thinking disposition. However, the sufficiency of originality construct was substantially related to all three critical thinking constructs. It is likely that the observed low relationship between problem solving style and critical thinking disposition is a dilution of the more substantial relationship between the sufficiency of originality construct and critical thinking disposition. This study showed that those with a tendency to generate ideas have higher critical thinking dispositions. This conclusion differs from Lamm et al. (2011) who also found a relationship between critical thinking disposition and problem solving style, but due to relationships between the efficiency and rule/group conformity constructs and problem solving style constructs.

### **Implications and Recommendations**

Study abroad instructors should expect students on international agricultural education trips to differ in terms of their cognitive processes styles such as learning style. Instructors in such settings should be prepared to address these differences in style as they would in a traditional instructional setting. For example, instructors can include integrating more ill-defined problems in their course objectives to draw out the natural cognitive tendencies of students. Further, cognitive assessment of critical thinking, learning style, and problem solving style should be utilized to help instructors understand the thinking and learning processes of students. Instructors can use

assessment tools to group students to work together most effectively and/or to achieve diversity in their thinking styles and approach to solving problems. Well-formed groups allow students to “share their conceptual and procedural knowledge in the joint construction of a problem solution, so that all students are actively engaged in the problem-solving process and differences of opinion are resolved in a reasonable manner” (Heller & Hollabaugh, 1992, p. 637).

Results from cognitive assessment tools can also be used to enhance students’ awareness of their own strengths and weaknesses when working with others (Kirton, 2003; Kolb, 2007). Therefore, scores (and their interpretations) should be shared with students to deepen their understanding of their own natural tendencies. Not only will this information assist students in working in academic learning groups, but also give them a greater understanding of how they relate to others throughout life (Kirton, 2003; Kolb, 2007).

As assessment tools are used it is imperative to consider what they are measuring. This study showed that individuals exhibiting accommodator and diverging learning styles with a preference for “doing” were more likely to have a “high” critical thinking disposition score. This finding may have implications for the measurement of critical thinking as a disposition or tendency rather than an absolute score. The UF-EMI’s current use of a high-low scoring procedure may in fact be misleading, and a more category-based approach, where critical thinking varies along a continuum more like learning style or problem solving style, may be a preferable method that allows a preferred learning style to be related to a preferred critical thinking style. Friedel et al. (2008) also advocated this approach.

From a theoretical standpoint, this study does raise questions with respect to Lamm et al.’s (2011) model, especially in

the relationship between learning style and critical thinking disposition as measured via the UF-EMI. Given this is a correlational study with a relatively modest *N*, care must be taken in terms of inferences, but it does present the opportunity for further research in this area. Testing of the full model with a larger number of participants and in varied international settings should be done in order to make a stronger contribution to our understanding of cognitive processes activated by international study abroad experiences.

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**Association for International Agricultural and Extension Education  
27<sup>th</sup> Annual Conference  
Professional Paper Presentation Abstracts**

**Editor's note:** The following abstracts are listed by thematic categories, with the lead author's last name listed alphabetically. They were derived from professional papers presented at the 27<sup>th</sup> Annual AIAEE conference.

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*Agricultural Communication*

**Communication Factors Affecting African Policymakers'  
Decisions about Agricultural Biotechnology**

**Belay Ejigu Begashaw**, The MDG Centre, East & Southern Africa  
**Gary J. Wingenbach**, Texas A&M University

The purpose of this study was to develop a model for impacting decisions on agricultural biotechnology practices in food production among African policymakers. The research focused on three African countries: South Africa, Malawi, and Ghana. Taking into consideration the different stages and levels of engagement in biotechnology, the researcher assumed these countries were representative of the current heterogeneous environment of Africa regarding biotechnology adoption. Policymakers, primarily government officials, civil servants and activists, journalists, business leaders, religious leaders, farmers' leaders, and extension workers responded to the study. From a total of 174 respondents, 69 were from Ghana, 76 from Malawi, and 29 from South Africa. The research instrument entitled "Communication Factors Affecting Africa Policymakers' Decisions about Agricultural Biotechnology" was designed to measure understanding, knowledge, and perceptions of agricultural biotechnology. These three important constructs were measured along with African policymakers' worldviews and values (moral values, labeling, regulation, consumers' rights, willingness to pay); information sources (interpersonal, print, and electronic forms); and socio-demographic characteristics (gender, age, education level, occupation, geographic location).

The results produced significant differences in policymakers' understanding of biotechnology, perceptions about biotechnology, and attitudes when compared by country of origin. Respondents from Malawi had significantly less agricultural biotechnology knowledge, held significantly more negative perceptions about agricultural biotechnology, and held significantly less positive attitudes about agricultural biotechnology than did respondents from Ghana or South Africa. No significant differences existed in policymakers' understanding, perceptions, or attitudes toward biotechnology when compared by gender. Significant moderate positive relationships occurred between worldviews and values, and understanding, and attitudes. These associations suggested the existence of some level of complementarities between worldviews and values, and understanding, and attitudes of African policymakers toward biotechnology for agricultural development. Other findings showed significant moderate associations between education level and worldviews and values, and low positive associations between occupation and worldviews and values, understanding, and attitudes toward biotechnology. However, no significant associations occurred between the dependent variables and gender or country of origin. In conclusion, the study showed that a critical gap exists in the

understanding of biotechnology between policymakers in Africa. Educating the African public in general and those of low educational backgrounds in particular, is strongly recommended. Taking into consideration the differences in understanding agricultural biotechnology, it is further suggested that a need exists to adopt a target group approach in educating Africa policymakers about biotechnology. A final recommendation is for the need to develop close collaboration between university scientists and mass media professionals as a means for raising the public's levels of trust for media, as well as access to university scientists by the societies which they serve.

### **Distributing Emergency Animal Health Communications to Under-served Non-commercial populations: A Case Study of the Animal Health Network**

**Theresa Pesi Murphrey**, Texas A&M University

**Shannon H. Degenhart**, Texas AgriLife Extension Service

**Lori L. Moore**, Texas A&M University

**T. Andy Vestal**, Texas AgriLife Extension Service

**Shavahn Loux**, Texas AgriLife Extension Service

Diffusion of information is a critical function of Extension that is not limited by geographic boundaries. In fact, at a time when the world is experiencing increased incidences of terrorism and terrorist threats, the diffusion of time-sensitive, critical, animal health information is of utmost importance. Extension is often seen as the entity that can provide the linkage between scientific information and the clientele to be served. The purpose of this case study was to share the process by which an emergency animal disease communication network concept for non-commercial, small, and hobby livestock and poultry owners was developed. The case study provides the reasoning behind the establishment of the Animal Health Network along with the processes that have been put in place to make it a reality, including determining the need for the network and methods used to encourage diffusion. The Animal Health Network concept evolved from a 2006 needs assessment conducted in three [state] regions by the National Center for Foreign Animal and Zoonotic Disease Defense (FAZD Center), a Department of Homeland Security University Center of Excellence.

The needs assessment identified the primary source of information for non-commercial livestock and poultry owners (NLPO) as word of mouth from trusted individuals, feed retail owners, and local Extension educators. Further, feed retail owners were identified as the most common conduit for communicating animal health and nutrition topics with NLPO in urban and rural settings. A recommendation of the needs assessment was the creation of an emergency education and communications network utilizing the Extension system and local feed retailers to deliver timely and accurate animal disease related alerts and information from the state animal health or public health veterinarian to NLPO. During Spring 2007 and Fall 2008, six 1890 Land Grant Institutions led the pilot test of the Animal Health Network concept in their states. The pilot test gathered feed retailer demographics pertaining to their potential outreach to NLPO to estimate the Network's potential impact; as well as perceptions of Network utility, animal disease-related information sources, and recommendations for improvement from Extension Administration, county Extension educators, State Veterinarians, and feed retailers to guide the development of a diffusion model and resource kit for the Animal Health Network. During December 2009 through March 2010 the Prototype Resource Kit was pilot tested during the mandatory state-wide adoption of the Animal Health Network in [state]. Lessons learned during the [State] Pilot Test were gathered via personal interviews and guided the redesign of the

Resource Kit into an Animal Health Network website. Appropriate communication strategies are critical to reach under-represented clientele of NLPO, especially in regard to animal health emergencies. It is the hope of the authors that by sharing the background of the Network concept, others in the international Extension and education community can benefit through use of the Network concept as a starting point for their own initiatives.

### **Developing and Implementing a Subscription Management System for Extension Clientele**

**Pete Vergot III**, University of Florida

**Theresa Friday**, University of Florida

**Jiannong Xin**, University of Florida

Extension is a partnership between state, federal, and county governments to provide scientific knowledge and expertise to the public. Printed newsletters and Extension bulletins are proven ways of disseminating current information to our audiences. With decreasing budgets and the increased use of the internet for information, Extension faculty had to find a way of delivering information to large groups of people. The Subscription Management System (SMS) was developed to meet Extension's need to provide faster and better service to their audiences. SMS allows the user (Extension clientele) to subscribe to a variety of local or region-wide newsletters and information on topics of agriculture production, environment, families and consumers, lawn and garden, sustainable living, and 4-H youth and volunteer development. Clientele can subscribe to newsletters, select specific topics for Extension workshops and seminars or receive Extension bulletins in which they have interest.

Clientele receive an e-mail announcing when the Extension newsletters are posted to a website or when Extension programs, workshops or demonstrations will be presented. If registration is limited, SMS subscribers will have an advantage since they will receive their notifications electronically versus other traditional methods. Along with email notifications, SMS allows users to sign-up to receive information via text message. SMS has been successfully developed and implemented in one Extension District. Changing every day, the system contains 89 newsletters and topics, and 28 Extension faculty have advertised 108 program announcements with messages sent to 55,765 clientele contacts. SMS has 13,014 total subscribers using the system to receive new knowledge provided by Extension. SMS has the capacity to deliver electronic mail messages, cell phone text messages, and printing of clientele address labels for clientele without electronic delivery capacity. SMS text messaging is the fastest means possible to inform our clients of pest or disease outbreaks. Instant notification of problems can help save crops, reduce costs and increase profit. If clientele do not have email or text messaging an option for printing. Mobile web applications will need to be developed to compliment the SMS and web based authoring systems introduced to enhance newsletter and extension bulletins utilized by Extension Faculty. Extension faculty time dedicated to design and teach other faculty and staff about using the system and programming time for software development were a major component of the resources needed. The software to make it all work was developed using Java and a Microsoft SQL (Structured Query Language) Server which runs as a database for the clientele side and the Extension information side of the web-based processes.

## *Collaborative Linkages*

### **Extent and Potential of Collaboration between Agriculture Teachers and Extension Workers for Dissemination of Agricultural Information to Rural Communities for Sustainable Development**

**Zethu N. Ndwandwe**, University of Swaziland  
**Barnabas M Dlamini**, University of Swaziland

The purpose of the ex post facto study was to explore explanatory variables associated with the extent and potential of collaboration between agriculture teachers and extension workers for dissemination of agricultural information to rural communities. The study was based on the hypothesis that collaboration between institutions plays a significant role in the formation of an agricultural knowledge and information system that draws on both modern science and farmers' indigenous knowledge, which will improve information dissemination. The target population of the study was all agriculture teachers and extension workers employed by government. Data were collected using a valid, reliable questionnaire which was self-administered. Descriptive statistics of frequencies, means, and standard deviations were used to describe data. Correlations coefficients were also used to describe relationships and regression analysis was used to determine explanatory variables for dissemination of agricultural information. Findings revealed that the variables that explained information dissemination were: methods used for disseminating agricultural information, collaboration between institutions, level of education of teachers, extension workers and farmers, work experience, number of clientele, funds to purchase information dissemination materials, policies guiding operation of teaching, and extension and in-service training. The conclusion was that dissemination of agricultural information can be enhanced by collaboration between institutions involved in agricultural development. The Ministries of Education and Agriculture should come up with a Memorandum of Understanding on how agriculture teachers and extension workers should collaborate for dissemination of agricultural information.

### **Predictors of Knowledge-sharing Behaviors among Community-based Natural Resources Organizations in the Okavango Delta, Botswana**

**O. T. Thakadu**, University of Botswana, Maun  
**Tracy Irani**, University of Florida  
**Ricky Telg**, University of Florida

Communication of information about natural resources and the environment is becoming an essential component in all aspects of sustainable development. Information diffusion interventions have often relied on the use of agents to disseminate information to their constituents, mainly agricultural innovations. Research related to knowledge-sharing behaviors is scarce in environmental/natural resources communication literature, though it abounds in other disciplines, such as organizational management. There is, therefore, a need to explore knowledge-sharing behaviors in the field of environmental communication. This article presents research results conducted to examine the relative contribution of selected predictors of knowledge sharing behaviors in explaining knowledge-sharing among the community-based natural resources management (CBNRM) leaders in the Okavango Delta, Botswana. The study was guided by theory of reasoned action and responsible environmental behavior model

framework. The constructs explored, drawn from the two theories; knowledge, beliefs, attitudes, locus of control and intentions, were used to conceptualize a research model. While the responsible environmental behavior model posits knowledge to be a product of three knowledge domains, the study proposed an additional fourth knowledge domain: traditional ecological knowledge (TEK). TEK denotes socio-ecological knowledge, practices, and beliefs accumulated by communities over time through adaptive process and transmitted culturally across generations.

One hundred and twenty subjects, representing 13 CBNRM Boards, participated in the quasi-experimental study. Subjects completed a retrospective-pretest instrument after exposure to an experimental treatment – presentation of an environmental issue. Data was analyzed using multiple regression statistical procedures. Findings show that the three immediate predictors; knowledge, locus of control, and attitudes accounted for 46.3% of the variance in the knowledge sharing behavioral intention. Knowledge and attitude had an equal relative importance in the prediction of behavioral intention, with locus of control exerting the least influence. Among the four knowledge domains, skill knowledge has the strongest effect, followed by issue knowledge. The results indicate that attitudes towards knowledge sharing, knowledge of the subject matter, mainly factual and skills, have important effects in the promotion of knowledge sharing behaviors. Based on the findings, an effective information-diffusion intervention targeting agents should focus on promoting favorable attitudes and beliefs towards knowledge-sharing among agents, as well as focusing on equipping the agents with both factual and skill knowledge.

### **Are Participatory Extension Projects Sustainable?**

**Sabrina Tuttle**, University of Arizona

**Cathy Martinez**, University of Arizona

**Linda Masters**, University of Arizona

**Kristine Uhlman** Texas A & M University

**Juanita Waits**, University of Arizona

**Grey Farrell**, University of Arizona

**Melvina Adolf** (formerly University of Arizona)

The failure of top-down transfer of technology, popular in western culture extension programming, is shared by many cultures in numerous countries around the world (Chambers, 1994; Toness, 2001; Tuttle, 2003). This top-down approach relies on information from universities being passed down to extension educators and then to indigenous communities with little to no recognition of local culture or indigenous knowledge. In contrast to urban, western lifestyles, the lives of many rural, indigenous peoples are often guided by deep-seated cultural and social systems that developed over many generations and which impact their daily life choices. (Tuttle, 2003; den Biggelaar, 1991). When this indigenous knowledge is overlooked or ignored by extension educators, affected clientele may not take ownership of extension program information, resulting in failure to adopt technologies that have little meaning in their traditional lives (Focus group interview, 2010; den Bigelaar, 1991). In response to these failures, extension educators, worldwide, have begun to incorporate participatory education methods that value indigenous knowledge and include local people as an integral part in the design and delivery of extension education. The authors/researchers of this project sought to answer the question: Are participatory methods of extension education sustainable, and can they help extensionists make their programs applicable and successful?

The researchers used qualitative research methods to conduct this study, employing triangulation of data. They conducted an extensive literature search and included the following data sources: 23 research articles, a dissertation, a 3 hour focus group interview, and an essay written by an indigenous extension practitioner with 27 years of experience. Research results showed that many barriers to participatory methods exist. These barriers included: extension systems that promote inappropriate, top-down transfer of technology; dependence on government or other social systems that debase project efficiency and sustainability (Grudens-Schuck, 2001); lack of infrastructure in remote rural areas (Focus group interview, 2010; Grudens-Schuck, 2001); high cost of participatory programs that are time and resource consuming; and the idea that rural and indigenous populations are not able to diagnose their own needs and are not capable of initiating their own development strategies. In spite of these barriers, many opportunities do exist for participatory extension education aimed at rural, indigenous clientele. Results from participatory projects are encouraging, especially when extensionists work patiently to design participatory programs with their local populations as co-learners and co-researchers, and when extension educator goals reflect the reality of the communities with which they work. When indigenous participants play a key role in design, planning, delivery, and evaluation of programs, then participatory methods can increase the adoption of new technologies. The literature contains numerous examples of successful participatory projects in a variety of cultures in several countries around the world. The authors concluded that this developing approach will result in sustainable programs and the successful transfer of knowledge by extension educators employing these techniques. Local communities will gain from implementation of new technologies while the use of participatory approaches will assist extension educators to be successful when introducing and incorporating new ideas into indigenous cultures.

### *Community Development*

#### **The Application of the Tractorette Program to Current Agriculture Education Efforts in the Developing World**

**Steven D. Aagard**, University of Wyoming  
**Tenzin Yeshi**, University of Wyoming  
**Ron Cunningham**, University of Wyoming

Borrowing from time-tested approaches to learning, this presentation examines applications of the agricultural education effort during World War II (the Tractorette Program) to education of producers in the developing world. This research analyzes visual communication approaches to the educational experience and explores how learners of a diverse literacy level learn successfully when exposed to visuals and hands-on techniques. The social implications of educating primarily urban females to assist in the day to day production of agriculture produced during the war and its relationship to education of women and men in developing countries to utilize and adopt appropriate production agriculture and food handling techniques are explored. The connection between the cooperative approaches by Extension personnel, implement companies, and volunteers to address a need in the developing world is highlighted. A theoretical framework for visual-based teaching and learning and adoption of new methods is included. A comparison with current Cooperative Extension programming efforts and the importance of visual based, technology enhanced and hands-on learning experiences to the learning environment are addressed.

### **Factors Explaining Sustainability of Agricultural Development Projects Implemented by Nongovernmental Organizations in Swaziland**

**Nomsa E. Dlamini**, University of Swaziland  
**Marietta P. Dlamini**, University of Swaziland  
**Barnabas M. Dlamini**, University of Swaziland

The purpose of the study was to determine factors that explain sustainability of rural agricultural development projects implemented by Non-Governmental Organizations (NGOs) in Swaziland. The study was ex post facto and used regression procedures to explain the amount of variance the main and rival independent variables/factors contribute to the dependent variable, sustainability of the rural agricultural project. The findings failed to reject the main hypothesis that participation of project members explained the highest variance in the sustainability of agricultural projects. This was followed by project ownership by members, and leadership in the project. The researchers reached the conclusion that for optimum development of human resources, project designers first and foremost need to nurture participation in the project, project members' ownership of the processes in the project stages, and project leadership, in order to get to greater sustainability of projects. This would, therefore, help to achieve members' food security, reduce poverty, and decrease environmental upkeep. Recommendations include: extension service using leadership in projects, to make their work effective and efficient, and also linking project members with sources of funds and capacity-building partners aside from the NGO with whom they worked. The study has implications for education and extension in agriculture: which is that educators and extension officers need to be trained more on being advisors on, and facilitators of, information and innovations flow.

### **Ethnography to Evaluate the Ability of Community Markets for Conservation to Establish Food Security and Increase Household Income for Small-scale Producers in the Luangwa Valley of Zambia**

**Caleb D. Dodd**, Texas Tech University  
**Wyatt N. DeJong**, South Dakota State University  
**Bradley A. Leger**, Louisiana State University AgCenter  
**Scott Burris**, Texas Tech University  
**Erica G. Irlbeck**, Texas Tech University  
**David E. Lawver**, Texas Tech University

Community Markets for Conservation (COMACO) is an emerging non-profit company in Zambia that is pioneering an innovative way for making markets and conservation work together. With a deteriorating economy, Zambians are in need of sustainable agriculture that promotes food security and wildlife conservation through education and empowerment. The purpose of this study was to evaluate the effects that COMACO is having on the social, economic, and environmental conditions of residents in the Luangwa Valley of Zambia. A qualitative ethnography approach was employed as the methodology. The research includes personal interviews, observations, and experiences from a three week service-learning project in the Luangwa Valley sponsored by the National FFA Foundation with funding from the Howard G. Buffett Foundation. Researchers documented their experiences in journals and field notes. The founder and CEO of COMACO, along with employees, local residents, COMACO

producers, and non-COMACO producers were interviewed to provide researchers with an overview of the COMACO model. Researchers found that COMACO is training local producers in conservative production practices that are producing higher yields with less erosion and soil depletion. In addition to farming practices COMACO educates local producers in human health practices, HIV/AIDS prevention, sanitation practices, and better living strategies. COMACO is actively tracking its producers' farming practices and recording yearly yields for each producer. The results indicate COMACO is promoting food security by using sustainable agricultural production methods. Food security leads to an increase in household income, which leads to higher education for local children. The COMACO model is a valuable tool for distributing information from management to individual producers as well as collecting performance records on specific crops and practices. COMACO's local organizational structure enhances livelihoods and skills while encouraging ownership. It should be noted that the researchers had limited access to information about factors that impact the long-term viability of COMACO and its supplemental funding strategies. The observations in this ethnography do not allow judgments to be made about the sustainability, scalability, or successful replication of the COMACO model. Because qualitative researchers use small, non-random, purposive samples, it is statistically difficult to generalize beyond the sample. However, findings of the qualitative study can be useful in exploring international agriculture and extension education from a development perspective. The study provides an example of the effects agriculture and extension can have on low income areas.

### **An Analysis of the Agricultural Sustainability of Small-Scale Farms in Lacluta Sub-District of Timor Leste: A Comparison of Internal and External Perspectives**

**Austen Moore**, New Mexico State University

**Tom Dormody**, New Mexico State University

**Dawn Van Leeuwen**, New Mexico State University

The sustainability of Timor Leste's traditional agriculture and its ability to meet the needs of the population is being reassessed. Government agricultural policy is being rewritten and development agencies are beginning to incorporate agricultural sustainability into their programs. However, these efforts are often stymied by insufficient information on Timorese agriculture, particularly data generated with local input. This study seeks to analyze the agricultural sustainability of the small-scale household farms in Lacluta sub-district of Timor Leste. Current agricultural practices were identified and assessed for sustainability, and farmers' perspectives on sustainability were established. The results identify specific priorities for development efforts. Agricultural sustainability was conceptualized as having four domains: (Agronomic/Production, Economic, Environmental, and Social/Basic Human Needs) which were measured by individual indicators that could be summated into indices. Subsistence farmers in Lacluta (n=50) were interviewed to produce both quantitative and qualitative data. After summating the indicators into indices for the four dimensions, agricultural sustainability of Lacluta was found to be moderate. The region's overall sustainability score was 0.42 on a scale of 0 to 1. A wide variance between the sustainability scores of the four dimensions was found. Subjects averaged 0.64 on the Social/Basic Human Needs index, 0.42 on the Agronomic/Production index, 0.40 on the Economic index, and a much lower 0.20 on the Environmental index. Farmers identified insect pests, rats and mice, and lack of soil fertility as the top three production problems faced, and identified tractors, improved seeds, and general capacity building as their three largest production needs. Subjects continue to practice shifting

agriculture at high levels (78%), while only 46% used some form of planned soil improvement. Data also showed a low ratio of staple crops produced to purchased crops (0.3-0.5 units produced for each unit purchased). The findings of this study address a dearth of research and identify specific areas requiring greater sustainability. Dimensions and sub-dimensions scoring low should be priority areas, and particular emphasis should be placed on incorporating environmental sustainability into agricultural development. This will produce a better resource base which will ultimately improve production, economics, and social factors.

**Cross-sector Collaboration for Agricultural and Rural Development:  
A Case Study of Nonprofit-Government Partnerships in Vietnam**

**Anh Nguyen**, Texas A&M University

**Kim Dooley**, Texas A&M University

**Glen Shinn**, Texas A&M University

**Scott Robinson**, Texas A&M University

Collaborative projects between international nonprofits and local governments have made increasingly important contributions to the goals of agricultural and rural development in developing countries. Yet few studies have examined these cross-sector partnerships, especially in terms of how sector-based characteristics may present simultaneously both opportunities and challenges and thus demand trade-offs from each partner for effective collaboration. This study contributes to filling the gap by examining the challenges that an international nonprofit encounters—from the perspective of the nonprofit itself—in its partnerships with local governments in rural Vietnam. The researcher adopted a qualitative case-study approach, employing personal, semi-structured, and in-depth interviews with eight Vietnamese staff working in the Program Division of a U.S.-based nonprofit in the Mekong River Delta, Vietnam. The data were collected during June-July 2010 and analyzed using the software package ATLAS.ti. Emerging from data analysis were four themes and pairs of subthemes: 1) Political influence: top-down vs. bottom-up approach in selecting governmental partners; 2) Partner types: professional organizations vs. mass organizations (both are governmental institutions); 3) Work incentives: financial motivation vs. mission dedication; and 4) Program expectations: holistic community development vs. household economic improvement. Respondents embrace similar, as well as divided perspectives, concerning these themes, which they consider crucial elements determining the effectiveness of their partnerships. Respondents as a whole recognize both the advantages and disadvantages that each theme entails, but they diverge in their interpretations and then approaches to solutions. The case study provides knowledge and insights into the intricacies of cross-sector partnerships, especially partnerships between international nonprofits and local governments in developing countries. For public leaders working in the field of agricultural and rural development, the study can provide lessons for strategic project management in cross-sector collaboration, assisting them in making decisions to minimize constraints and maximize opportunities in collaborative environments.

*Extension Methods***Demonstration Trains and their Potential Educational Use in the 21<sup>st</sup> Century****Michael L. Basinger**, University of Wyoming**Steven D. Aagard**, University of Wyoming

Demonstration trains have a history of effective learning in the area of agriculture, animal husbandry, home economics, and other areas of adult and community education. In the United States and Australia this venue was employed a century ago prior to the development of other education delivery infrastructure. In the twentieth century, demonstration trains were employed in Europe and the Indian Subcontinent for cultural and scientific education. In the twenty-first century they have been used in Africa for medical treatment and health education. This paper explored the practical potential for the expansion of public education and resources along train lines in developing nations. While the potential of rail logistics and supporting infrastructure was be discussed, the primary focus will be on the philosophy of creating or expanding rail-born education and support in rural areas to encompass multiple educational foci. Adult educational theory was examined in relation to the rail-born classroom and hands-on clinic model. In particular, the efficacy of integrating multiple development topics and experts in a single venue was explored. Included in the analysis were the advantages of accessible in situ demonstrations and technology, a holistic and integrated approach to a host of related community issues, the role model importance of in-person expertise, the opportunity to provide praxis opportunities and timely hands-on feedback to learners, and the importance in rural environment of community – rather than just individual – learning events. The methodology used audiovisual and written examples of demonstration train projects as a matrix for examining the practical potential for this media, in the context of adult learning theory and philosophy. The findings were that demonstration/learning trains represent a practical opportunity for rural education, which can integrate a variety of community concerns in ways that are consistent with the best philosophy and theory of adult learning. This confluence of subject matter may include health, agriculture (with supporting disciplines), technological competence, infrastructure development, communication, and methodologies for community cohesion and self-sufficiency. These aspects of the demonstration trains of the past are important today in a developing world with a host of literacy levels.

**Introduction of Modernized Relic Technology for Sustainable Agricultural Practices in Mali: Strategies, Challenges, & Opportunities — A Case Study****James W. Hynes**, Sam Houston State University**Theresa Pesl Murphrey**, Texas A&M University**M. Craig Edwards**, Oklahoma State University

International agricultural development requires consistent effort, trust, knowledge, and a plan. This case study shares the story of development efforts in Mali, Africa focused on the use of modernized relic technologies, as an innovation to facilitate sustainable agricultural practices through capacity building, in order to meet identified needs. A series of activities were conducted that included: 1) on-site visits in Mali for extensive listening sessions and interviews with farmers, agricultural systems specialists, educators, and cognizant government officials, 2) recruitment of United States faculty members to travel to Mali to exchange ideas, 3) recruitment

of Malians to participate in an intensive training program held in a southern Indiana Amish community, and 4) recruitment of Amish manufacturers of modernized relic technology to serve as long-term trainers of Malian farm equipment manufacturers. The educational importance of this case study was reflected in the training required to enable sustainable community development. This project built on the Malians' indigenous knowledge and skills using scale appropriate equipment, and encouraged the establishment of self-sustaining cottage industries to serve communities. The project has benefited Mali by introducing a different approach to food production, using existing animal power more efficiently as a substitute for growing crops by hand or by fossil fuel-powered machines. It is also important to recognize that opportunities exist for United States farm equipment manufacturers to help create new markets for their products, while at the same time training Mali's manufacturers. Efforts are underway to secure funding to support the training needs described.

### **The Evolution of Extension Research and Education Methods from Colonialism to Participatory**

**Linda Masters**, University of Arizona

**Sabrina Tuttle**, University of Arizona

Under colonial rule, indigenous educational programs were rarely an attempt to assist the subject people with their own issues, but instead, were a systematic approach to change their lifestyle to mimic that of the dominant western culture. In later years, when some colonial governments introduced well-meaning educational programs or economic improvement projects intended to help indigenous people, these programs were still based on European cultural models with no regard or respect of indigenous ways-of-life. Research by Bray (1993) showed that schools were primarily designed "to meet the conceptions and needs of the colonizers rather than the colonized." This approach influenced the amount, type, and availability of education to indigenous people. In many cases, limited access to educational information was intentionally implemented in order to maintain social inequality between the colonial rulers and the conquered indigenous people. The goal was modernization at the expense of, or at least, with little regard for, traditionalism.

Even into the 20<sup>th</sup> century, extension transfer-of-knowledge was based on the belief that "scientists know best, new technology is better than old, technology is needed, innovators will transfer information to laggards and many people are not information seekers" (Chamala 1999). Eventually, researchers and educators working with indigenous populations began to realize that failures of their programs could be attributed to the lack of participation by local communities and the omission of traditional knowledge and cultural expression in program planning and implementation. The failure of extension programs within indigenous communities suggested that agriculture extension services were no longer adequate to meet the needs of rural and indigenous farmers. By the 1990s, a new participatory research and educational approach began to be implemented in several countries around the world. This method actively includes indigenous community members in; the identification of program needs, development and implementation of research or education programs, and evaluation of outcomes. In the past 20 years, use of participatory methods has become increasingly prevalent in extension efforts. The primary idea is that "community ownership and empowerment are crucial in supporting and effecting change" (Beilin 2001).

*Extension Reform and Strategies***Needs Assessment and Strategy Building for Survival of  
Drought Shock Events in the Tigray Region of Northern Ethiopia****Ryan Collett**, Texas A&M University**Gary Wingenbach**, Texas A&M University

The highland Tigray region of Northern Ethiopia has historically suffered significantly from drought shock events. These events, coupled with considerable soil degradation, have left a severe impact on the agricultural output and community survival of the region. The purpose of this qualitative study was to determine how future interventions can better serve the drought related needs of smallholders in Tigray. The study comprised two objectives: 1) Identify the principal needs of smallholder communities in Tigray to survive and thrive through drought shock events; 2) Facilitate sustainable strategy development toward alleviating drought effects with the regional center of higher education, Mekelle University.

The researcher traveled to Tigray, Ethiopia and used a combination of Participatory Rural Appraisal (PRA) and Rapid Rural Appraisal (RRA) techniques which utilized focus group discussions and activities to assess community-level needs. Interviews with Non-Governmental Agencies (NGOs), Ministry of Agriculture and Rural Development (MARD) employees, and Mekelle University faculty and staff contributed institutional perspective on drought survival. The collected data was analyzed categorically into areas of needed capacity improvement. These areas included extension and agricultural education, institutional memory, soil and water conservation, alternative income generating activities, livestock husbandry and feed availability, and women headed households' small business capacity. Short term solutions have not historically been sustainable for lessening the effects of drought in Tigray. However, this research shows that long term and carefully planned interventions, focused on the assessed smallholder need categories, may have substantial positive impact for the future. While drought is not the sole cause of poverty in the region, alleviating the negative effects of drought is a necessary step toward ending the cyclic poverty traps which hamper the lives of smallholders in Tigray.

**Agricultural Development Assessments and Strategies in Post-Conflict Settings:  
An Empirical Case Study of Eight Southern Iraqi Provinces****James Hafer**, Chief Dull Knife College**Glen Shinn**, Texas A&M University**Gary E. Briers**, Texas A&M University**David Lawver**, Texas Tech University

This research was an empirical case study of post-conflict agricultural development assessments and strategies in eight southern Iraqi provinces. The purpose was to synthesize emergent themes, trends, and lessons learned from aggregated agricultural development reports and documents related to post-conflict needs assessments. Using a systems-approach, the goal was to improve Iraqi agricultural practice, extension and training, community development, security, and policies for governance. Three objectives were identified to achieve the purpose of this study: 1) identify emergent agricultural development themes from each of the eight Iraqi

provinces; 2) identify emergent agricultural development trends; and, 3) provide relevant case documentation to assist in future agricultural development/post-conflict development efforts. The case study method fit the criteria of the research design. Grounded theory and sensitizing concepts guided the conceptual framework. Using qualitative and quantitative techniques, particular attention was given to agricultural specialties, technical and social knowledge systems, and data collection and analysis protocols. Data collection, analysis, and theory stood in reciprocal relationships. This study recognized three limitations, one delimitation, and four assumptions. Original data were collected as interviews, field notes, final provincial reports, and after-action reviews between June and December 2008.

A series of SWOT analyses within this case revealed eight provinces with four impending strengths, five weaknesses coupled to a plethora of subsumed issues, 15 opportunities, and eight threats to sustainable agricultural and post-conflict developmental efforts. It was found that Iraqi agricultural production lags due to many technical, educational, economic, social, and system factors. Promising practices hinge on the application of proven theories in guiding development and sustainability. Maslow's hierarchy of needs is fundamental in sequencing sustainable development and facilitating receptivity to change. Roger's diffusion of innovation theory guides the use of opinion leaders in the adoption and diffusion of innovations. Six general principles emerged from the case analysis of the post-conflict assessments: 1) shared ownership and responsibility are essential; 2) systems-thinking must recognize cultural values and norms; 3) all efforts must be complementary and cooperative; 4) short-term effort must lead to long-term strategies, 5) guard against developing dependency through aid; and 6) integrated theory, policy, and practice will more likely lead to sustainable value chains for food security and economic development in post-conflict environments. With a median age of 20.4, it may be that largest threat to the future of Iraq is not violence, but the diminishing hope of young people caused by their inability to obtain vocational-based skill training and the lack of jobs that match such skills. A pervasive lack of job opportunities, a perceived lack of job availability, and persistent poverty promotes civil unrest with the possibility of insurgency. An aggressive youth development focus on strengths and opportunities will have a positive impact in the current society.

**The Sasakawa Africa Fund for Extension Education's (SAFE) Initiative to Serve Rural Populations in Africa through Supervised Enterprise Projects (SEPs): Graduates' Perceptions of Opportunities and Constraints Related to Using SEPs in Mali**

**Assa Kanté**, Sasakawa Africa Fund for Extension Education  
**M. Craig Edwards**, Oklahoma State University  
**Cindy Blackwell**, Oklahoma State University

The performance of Extension educators in Sub-Saharan Africa, especially those who work with smallholder and subsistence farmers, has been questioned by many observers (Kroma, 2003; Owens, Zinnah, Annor-Frempong, & Obeng, 2001). Calls to provide these educators with significant professional development opportunities are pervasive. To that end, this study assessed the perceptions of 50 mid-career Extension professionals who had completed the SAFE training program in the Republic of Mali regarding their training experience with Supervised Enterprise Projects (SEPs) as a tool for serving their clients. SEPs link theory and practice and highlight learning by experience. Through the SEP approach, Extension educators develop and implement projects with farmers under the supervision of faculty from colleges and universities, as well as their employers. The study followed a triangulation mixed methods design (Creswell, 2005),

which included using a survey instrument and conducting semi-structured focus group interviews (Krueger, 1994) to collect data. Triangulation of the findings revealed that the graduates' overall SEP experiences were positive and useful. However, some issues and concerns emerged, including cost, supervisory practices, and standards regarding project reporting and thesis writing. The researchers concluded that the SEP experiences needed systematic financial support, more effective supervision, a standardized reporting format, as well as the trainees networking with potential funders. Moreover, trainees should secure the commitment of beneficiaries (i.e., their clients) to endorse contracts with microloan agencies guaranteeing the repayment of loans supporting SEPs. The study's design allowed the investigators to crosscheck their data thus strengthening the validity of the investigation's findings.

**An Assessment of the Sasakawa Africa Fund for Extension Education's (SAFE) Training Program in Mali: Graduates' Perceptions of the Training's Impact on Their Professional Performance and Their Clients' Practices**

**Assa Kanté**, Sasakawa Africa Fund for Extension Education (SAFE)  
**M. Craig Edwards**, Oklahoma State University  
**Cindy Blackwell**, Oklahoma State University

This descriptive study included 50 mid-career Extension professionals who had completed the Sasakawa Africa Fund for Extension Education (SAFE) training program in the Republic of Mali (West Africa). The study assessed perceptions of SAFE graduates regarding the training's impact on their professional performance and related behaviors of the graduates' clients. A survey instrument was used to collect data. Participants perceived the training had a significant impact on their overall professional competence, and that the knowledge they acquired increased their effectiveness and satisfied their training needs. All of the graduates were upgraded to an advanced job category after completing the training. Nearly two-thirds indicated they observed changes in their clients' practices attributed to the SAFE training.

**A Comparative Analysis of General Agricultural Extension Models and a Conceptual Goodness of Fit for Cameroon**

**Gwendoline Naah Nyambi**, Texas A&M University  
**Glen Shinn**, Texas A&M University  
**Gary Briers**, Texas A&M University  
**Tim Murphy**, Texas A&M University

During an era of nation-building in the United States, Thomas Jefferson said, "If a nation expects to be ignorant and free, in a state of civilization, it expects what never was and will never be." Faced with many challenges and in need of a catalyst for economic, social, and political development, early statesmen recognized the need for extending practical knowledge and technologies to all citizens as an essential method for development. This approach created the tripartite agricultural education, research, and extension services and has been instrumental in ensuring food security, economic development, and sustainability. Many African countries are in various stages of nation-building and facing monumental challenges, including meeting the United Nations Millennium Development Goals (MDGs). Progress toward achieving the MDGs has been slow, and it varies among nations across the continent. In Cameroon, some MDG progress has been made, but an effective catalyst is needed to move forward. There is general

consensus among policy makers that priority should be given to the agriculture sector, especially to production of high-value food crops. This sector has received little attention for improvement in Cameroon even though the country is endowed with natural resources, and is only one of few nations in sub-Saharan Africa with substantial potential for growth, profitability, and sustainability in the agriculture sector.

While improvements are needed throughout the value-chain, the development of human capital associated with agriculture is the most valuable resource and a catalyst for sustainable growth. An evaluation of the strengths, weaknesses, opportunities, and threats (SWOT) of agricultural extension models revealed why some models succeed and others do not. The purpose of this investigation was to analyze selected extension program models and strategies from various countries in an attempt to identify aspects that might be successfully adopted by the agricultural extension services in Cameroon. A SWOT analysis achieved through directed training, field visits, and participatory appraisal techniques revealed various models including: 1) top-down extension, 2) participatory extension, 3) privatized extension, and 4) training and visit extension. The paper concludes with workable pro-poor recommendations that can be used to improve access to appropriate innovations, increase self-reliance, and ensure sustainability. Even though each model had positive aspects, no single model seemed to be totally adequate for the efficient delivery of extension services in Cameroon. This paper identifies and describes the SWOT analysis. The most promising models emphasized and promoted self-reliance and micro-enterprise training as key elements of sustainable value chain agriculture for food security and economic development. It is anticipated that these findings will serve as the basis for development of an improved and more comprehensive agricultural research, extension, and education service in Cameroon, and will serve as a catalyst for achieving the MDGs.

### *Information and Communication Strategies*

#### **Introducing the Global Rangelands Knowledge System: A Web Portal for Accessing International Rangeland Management and Extension Resources**

**Barbara Hutchinson**, University of Arizona  
**Johannes Keizer**, FAO  
**Valeria Pesce**, GFAR/FAO  
**Matt Rahr**, University of Arizona)  
**Jeanne Pfander**, University of Arizona,  
**Sheila Merrigan**, University of Arizona

With funding from the USDA/NIFA International Science and Education program, a collaboration involving members of the Western Rangelands Partnership (University of Arizona, University of California-Davis, and University of Idaho), the Food and Agriculture Organization of the United Nations (FAO), and Rangelands Australia, is in the process of developing a comprehensive Global Rangelands Knowledge System (Global Rangelands). The goal of the new Global Rangelands system is to provide access to international resources on sustainable rangeland management and rehabilitation through redesign and expansion of the current Rangelands West portal (<http://rangelandswest.org>), and through the eXtension Rangelands website. Online services will include 1) a fully searchable international repository of full-text articles, documents, images, and multi-media teaching, learning, and outreach materials on rangeland topics; 2) applications to facilitate expanded knowledge of international work in rangeland research, teaching, and extension; 3) multi-media learning modules on global

rangelands; 4) synthesis documents on aspects of international outreach practices relevant to Extension programming; and 5) a customized search interface that improves access to critical rangelands information and encourages direct user engagement in the Global Rangelands system. This presentation will describe the two-year project, provide a demonstration of the results achieved to date, and discuss such technical aspects as: utilizing open source Drupal software, implementing the AGROVOC controlled vocabulary, determining metadata formats for original and harvested content, and engaging collaborators and stakeholders in the development of the portal.

### **Creative Immersion Using Second Life for International Experiences: Are Agricultural Students Ready, Willing, and Able?**

**Theresa Pesi Murphrey**, Texas A&M University  
**Tracy Rutherford**, Texas Tech University  
**David Doerfert**, Texas Tech University  
**Leslie D. Edgar**, University of Arkansas

A mechanism for students to gain international exposure is critical. International experiences have been documented to increase participants' world-view, increase interest in international activities, and provide participants greater insight into their own communication skills (Place, Vergot, Dragon, & Hightower, 2008). New technologies, such as Second Life™, offer inventive ways to enable students to gain international experiences. In fact, several parts of the real world have been replicated in Second Life. However, technology acceptance can become a barrier to the adoption and successful implementation and use of technologies. Venkatesh, Morris, Davis, and Davis (2003) devised "core determinants of intension and usage" (p. 425) related to technology acceptance and identified this theory as the Unified Theory of Acceptance and Use of Technology (UTAUT). The UTAUT theory serves as the contextual framework for this study. The purpose was to describe agricultural students' technology readiness in an effort to document potential strategies that could be used to implement Second Life as a means to bring about international experiences. The responding sample included 736 students from two institutions of higher education, predominately undergraduates (92%) and female (75.8%). Findings reveal that while Second Life may be seen by instructors as an innovative teaching tool - students do not necessarily share that perspective. Students reported access to resources and knowledge to use Second Life, but reported less agreement with its application in education. Strategies must enable students to see the value in utilizing Second Life in order to succeed in creating valuable, virtual, international experiences.

### **Computer Use in Rural Central American Schools – Opportunities and Challenges**

**Michael R. McDermott**, Texas A&M University  
**Gary J. Wingenbach**, Texas A&M University  
**Theresa Pesi Murphrey**, Texas A&M University

Quality of education is a global issue that must be addressed at the local level one teacher at a time. Computer technology training can greatly impact the success of teachers in the public classroom. For public school teachers from rural communities in Nicaragua, El Salvador, Honduras, and the Dominican Republic, this training has the potential to dramatically improve instruction through professional growth of each individual teacher. The purpose of this study was

to describe the effects of computer technology training for public school teachers from mostly rural agricultural communities in Nicaragua, El Salvador, Honduras, and the Dominican Republic. Sixty-two teachers served as respondents in this study through their participation in the USAID program, Cooperative Association of States for Scholarships (CASS). The CASS program, located at Palo Alto Community College in San Antonio, TX, is a yearlong education program consisting of direct teaching sections from the CASS instructors and practicum with the local dual language schools in San Antonio. Computer use training is only one part of the overall CASS program; however all participant experiences are to be blogged. The instrument used for this study contained both quantitative and qualitative questions written in Spanish. The instrument contained three primary components: 1) computer knowledge growth, 2) home country worksite conditions, and 3) participants' future plans. A convenience sampling method was used to gather the subject population. Participation in the survey was voluntary. Instructions for the online instrument were provided orally in Spanish and the participants were given one week to complete the survey. Average survey completion time was 35 minutes. Data were analyzed using descriptive statistics.

The results clearly revealed improvement of computer skills as a result of training. This improvement may be attributed to the program design, with its emphasis on computer training from the beginning and practice opportunity integration throughout the duration of the training. Both quantitative and qualitative data revealed very little, to no technology resources (computers and Internet access) available in home country worksite communities. When asked about students' perceptions of computers, the teachers reported students' feelings of enthusiasm to use computers. The teachers also shared that implementation of computer technology is a critical need in their country's academic efforts. Most all the participants stated that they would share with other teachers and students what they learned during their training in the CASS program. Overall, results from this study revealed that computer training in the CASS program is effective and very much needed by its participants. Upon completion of the program, these Central American teachers become equipped to function as change agents of their worksite communities. It is recommended that further study focus on the effectiveness of the program after training and a longitudinal study focus on the impact of teachers in their communities upon return. It is also recommended that teachers who show potential to effectively train other teachers in their communities should, as a result, be considered by their community leaders as candidates to facilitate the diffusion of computer use for education in their communities.

### *International and Domestic Linkages*

#### **Fostering Valuable Growth for Students and Faculty through Participation in the Belize Field School Program**

**Kristin A. Drexler**, American Public University System  
**Brenda SeEVERS**, New Mexico State University

The benefit of experiential learning abroad is well documented. The purpose of this paper is to report the results from an on-going study to determine personal and academic growth of students and faculty who participate in the Belize Field School Program (BFSP). The BFSP is a series of 10- to 13-day field study courses which take place in (and directly benefit) the host country of Belize, Central America. A qualitative approach was used to evaluate the Program. Post-course surveys of 70 students and faculty over the past three years were categorized into two main areas of growth: personal and academic, with some professional benefits also

identified. The study was conducted at a U.S. university with students and faculty from the College of Arts and Sciences and the College of Agricultural, Consumer and Environmental Sciences. At that university and elsewhere, the trend for future Study Abroad programs is toward short term faculty-led courses. The results of the study find that the Belize Field School Program fills an important role and fosters valuable growth for students and faculty through experiential learning in the global learning environment. This paper hopes to motivate other universities to develop similar programs at their home institutions as this type of program can enhance curricula and study abroad opportunities.

### **Attitude toward Travel Destinations among Extension Officers in Trinidad, W.I. and Perceived Barriers to Participation in an International Extension Experience**

**Amy Harder**, University of Florida

**Alexa J. Lamm**, University of Florida

**Wayne Ganpat**, The University of the West Indies

**James R. Lindner**, Texas A&M University

Extension professionals can develop global competencies through professional travel. The overall purpose of the study was to understand Trinidadian extension officers' attitudes towards participating in an international extension experience (IEE). The study focused on extension officers' perceptions of the appeal of twenty-two selected locations for an IEE, perceptions of six travel concerns as barriers to IEE participation, and potential relationships between perceptions of location appeal and travel concerns. Respondents did not express a clear preference for one geographical sub-region over another. All sub-regions were considered to be "somewhat appealing" with the exception of Micronesia, which was "somewhat unappealing." Respondents' feelings about IEE participation were mostly independent of any travel concerns. Only a language barrier was perceived to be a potential barrier to IEE participation. Concerns about food-borne illness, disease, terrorism, crime, and unjust government action were not. Respondents were more likely to perceive travel concerns as barriers when considering traveling to all parts of Africa and South-Eastern and Southern Asia. Significant, low negative correlations existed between travel concerns and East Africa, Middle Africa, South-Eastern Asia, Northern Africa, and Southern Asia.

The findings from this study imply that positive behavioral beliefs about IEE participation are held by Trinidadian extension officers. They were open to traveling almost anywhere, which increases their opportunities to be exposed to many cultures. Individual preferences should be taken into account as Extension organizations plan international experiences. Beliefs about the consequences of a behavior – such as potentially becoming a crime victim - are directly tied to whether or not an individual will engage in a specific behavior. More research is needed to understand the relationships between travel concerns and Africa and South-Eastern and Southern Asia, given the demand for multinational extension development work in these locations. Communication was the barrier that participants tended to be most concerned about when considering an IEE. Given that English is the only official language in Trinidad and Tobago, it would seem likely that travel to a country where English is not the primary language would not be preferred. However, extension officers' concerns about communication barriers did not dictate their preference for an international experience. More research is needed to understand why extension officers would modify their concerns about communications as a barrier.

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**Adding Value to U.S. Academia by Identifying Best Practices for  
Engaging Faculty in International Experiences**

**Alexa J. Lamm**, University of Florida  
**T. Grady Roberts**, University of Florida  
**Amy Harder**, University of Florida  
**Nicole Stedman**, University of Florida  
**Marta Hartmann**, University of Florida

A clear commitment to a global vision, including a curriculum with a strong international content, is an essential part of an academic environment striving to produce globally-competent students for today's workforce. Faculty members fully engaged in international integration are necessary for this to occur; therefore faculty members need to be exposed to and participate in international experiences. The purpose of this study was to identify the best practices for planning and implementing an agricultural faculty-focused international experience. A basic qualitative design utilizing content analysis of reflective statements collected from a team of faculty members that recently led a faculty-focused international experience was used to create best practices others can use when planning similar experiences. Communication, group dynamics, expectations, free time, and contrast were the primary themes emerging from the data analysis. Suggested discussions to have with the faculty participants prior to the trip included specifics regarding the daily itinerary, possible illnesses participants may acquire while traveling (including food-borne illness), cultural considerations, needed documentation, packing/other travel considerations, and availability of phones/internet. During the trip a daily detailed schedule, local translators, an assessment of each trip participant's ability to complete physical activities, and a participant log of where everyone was during the day is strongly suggested. Initial team building activities were suggested along with plans for group development to discourage small groups from forming. Roles of each participant/planning team member should be clearly established prior to traveling with trust built around those expectations. This includes faculty responsibilities, language needs, and the physical demands of the activities occurring throughout the trip. While all felt a shorter time frame was best for these types of experiences, participants need to be given the opportunity to explore on their own. Opportunities to shop, eat meals independently, have down time, and time for work are suggested. In addition, working to create diversity among the agricultural areas represented by the faculty members on the trip is strongly suggested as it assisted in gaining different perspectives on the experience. The best practices established by this planning team recognized changes could enhance future trips of this type. Since faculty members' cultural competence is essential to globalizing undergraduate curricula, using the perspectives of previously planned faculty trips to create future plans will ensure high quality experiences.

**Perceptions of Competencies Needed for Teaching in International Extension Settings**

**Robert Strong**, Texas A&M University  
**Amy Harder**, University of Florida

Agricultural extension plays a significant role in the global production and supply of food. A problem with extension services in developing countries is the lack of an adequate balance between the technical and professional competencies of personnel. The purpose of this study was to explore the professional competencies needed by U.S. extension agents to teach

adults in international settings. The conceptual framework for this study was constructed on the knowledge domains that doctoral students should acquire before teaching internationally. Twelve internationally experienced U.S. extension agents were purposively selected to participate in the study based on their regional supervisor's recommendation of program excellence. Change strategies, program evaluation methods, learning principles, and organizational development were identified by the agents as professional competencies needed before teaching internationally. Enrolling in a doctoral program is an avenue for extension agents to acquire the professional competencies associated with teaching adults in international settings. Extension administrators and professional development specialists should ensure mechanisms are in place for current and future agricultural extension agents to acquire these competencies. U.S. agricultural extension agents could be mentored by agents proficient in the identified professional competencies before teaching globally. Preparing current and future U.S. extension agents in the identified professional competencies could enhance global agricultural extension programs.

### **It's a Small World After All: Understanding Global Youth Perceptions About Sustainable Agriculture and Food Systems Through Trends from the Literature**

**Laura Anne Sanagorski**, University of Florida Institute of Food and Agricultural Sciences

Sustainable agriculture represents a critical solution to some current agricultural practices, which are economically, environmentally, and socially devastating. Consumers have been recognized as driving forces for change in our food systems. It has been asserted that educated youth become educated consumers. Educational programming can be used to teach youth about food choices, sustainability, local agriculture, and land use. An ideal starting point for developing educational programs is through the identification of global youth perceptions about sustainable agriculture and food systems. Emerging trends can be used as a starting point to begin educational programming at the local level. Global commonalities in youth perceptions and behaviors towards sustainable agriculture and food systems exist in the literature that could form the basis for a unified educational model. Two of the themes identified in the literature include a great apprehension in today's youth regarding the environmental issues they will inherit and their overwhelming acceptance and support for the principles of sustainable agriculture and food systems. Increasing educator knowledge about these and other common youth perspectives on sustainable agriculture and food systems provide a powerful starting point to begin programming efforts in communities worldwide. Finally, further research is needed in order to build the existing body of knowledge related to youth perceptions of sustainable food systems and agriculture.

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**Transformative Learning Experiences Reported by Faculty Creating and Teaching  
Agricultural Sustainability for Study Abroad**

**Lori Unruh Snyder**, Purdue University  
**Alexa J. Lamm**, University of Florida  
**Joel Brendemuhl**, University of Florida  
**Tracy Irani**, University of Florida  
**T. Grady Roberts**, University of Florida  
**Mary T. Rodriguez**, University of Florida  
**Julia Navarro**, Purdue University

International learning experiences are turning into critical elements of an undergraduate's education as the need for globally prepared agricultural scientists continues to increase. Since it is important for students to gain new and global perspectives, whether in the classroom or through study abroad opportunities, it is important for faculty to also gain new and global perspectives. Teaching within an international setting allows for the transformative potential for suggesting the promise of professional and personal growth. One way to gain exposure to international issues is to engage in planning, developing, and leading a study abroad course. The objective of this research was to describe how faculty engagement in the creation and implementation of a study abroad course impacted their views of addressing global issues and transformed their perspectives in the classroom. The course was conducted in the USA and Costa Rica during 2009 and 2010, lasted seven weeks, and focused on the principles of sustainable agriculture and entrepreneurship. Of the faculty involved, previous experience teaching abroad ranged from no experience to leading seven trips. Teaching methods included lectures, field work, and outreach activities. The course planning and teaching team was made up of faculty from three U.S. universities and one Costa Rican University. The faculty responded to a series of open ended questions after completing the course. Thirty-two responses were received and participants reported this experience opened their eyes to becoming involved in international agricultural sustainability and felt the networking with a diverse team of professionals will prove to be extremely valuable in their future teaching.

***Producer Training***

**Livestock Industry Development and Education in Afghanistan: Views from the Producers**

**Justen Smith**, Utah State University  
**Tim Kock**, Louis Berger Group  
**Stan Guy**, Utah State University  
**Jerry Turnbull**, Louis Berger Group

Afghanistan is highly dependent on the production of livestock. Livestock production is a vital commodity in Afghanistan, integrated into most farming communities and provides the major food source for many nomadic (Kuchi) Afghans. Moreover, the rebuilding of the country has created larger incomes for Afghans, thus creating more demand for meat products by consumers. Therefore, the need for livestock production increases. For this study, a survey instrument was created and random farm families were interviewed to determine if significant opportunities existed to add value, mainly through nutrition, extension education, and development of farm service centers to the livestock sector of the provinces of Khost and Paktia.

Results found that from 77 to 100 percent of farm families would be willing to purchase feed from farm stores, farm stores could also serve as extension centers, that a combination of both grazing and confined feeding are the best option for their livestock operations, and that their livestock suffer from nutrition related deficiencies. Furthermore data indicated that less than 35 percent of producers indicated feeds are readily available. Only nine percent thought grazing lands are readily available. Ninety-eight percent claimed grazing lands are overgrazed and in need of improvement. The results of this study and survey can serve as a valuable resource to agricultural development agencies in determining the amount of funding and type of projects that can be implemented to improve the livestock industry in Afghanistan.

### **Assessment of the Cooperative Football Tournament Program's Impact on Rwandan Youth's Knowledge and Attitudes of Coffee Production**

**Ryan Collett**, Texas A&M University

As coffee producers age across Africa, there is a growing concern that African youth are not gaining the necessary knowledge and skills to fill the gap in production left by previous generations. This concern has manifested itself particularly in Rwanda, a country which has seen tremendous improvement in the quality coffee production industry. Rwanda has gone from four coffee washing stations to over a 100 in the past decade and has also implemented multiple coffee cupping competitions. These investments have led to a significant increase in both production quality and smallholder incomes; as higher quality coffee garners better prices in the world market. Amidst these exemplary improvements, there is a concern that younger generations of Rwandans are not being prepared to carry forward the country's blossoming quality coffee industry. To combat this problem, Union Hand-Roasted Coffee, in conjunction with the USAID funded project Sustaining Partnerships to Enhance Rural Enterprise and Agribusiness Development (SPREAD), sponsored a youth Coffee Cooperative Football Tournament Program (CCFTP) in two Rwandan coffee cooperatives. The program's purpose was to educate participant youths in quality coffee production, cooperative principles, public health best practices, and to foster excitement about choosing coffee production as a possible future career. The purpose of this study was to evaluate the effectiveness of the tournament program in forming the knowledge and attitudes of youth participants toward coffee production. The study used mixed methods comprised of a three section quantitative instrument and qualitative focus group discussions. As there was no prior access to population information, the researcher used a convenience sample of 222 active CCFTP participants and facilitated 11 focus group discussions during actual tournament games.

The data indicated that the CCFTP provided promising social benefits to the participants. However, it shows little impact toward participants' coffee production knowledge as respondents scored an average of 25% on the knowledge section. In focus group discussions it was difficult to pinpoint how much time participants actually spent hearing coffee production lessons as well as determining what teaching methods were being utilized by the instructors. In the focus groups, coffee production was typically regarded as the career taken by those who do not finish school or fail to find better opportunities. To be more impactful in the future, CCFTPs need to have greater logistical coordination and a standardized instruction curriculum.

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**Explanatory Variables Associated with the Yield Performance Gap among Small, Medium, and Large Scale Sugar Cane Growers at Ubombo Sugar-Swaziland**

**Mbuyazwe M. Dlamini**, University of Swaziland

**Barnabas M. Dlamini**, University of Swaziland

The purpose of the ex post facto study was to determine explanatory variables for sugar cane yield among small, medium, and large scale growers at Ubombo Sugar. The research was based on the hypothesis that good management practices and adequate inputs variables increases sugar cane yield. The target population of the census study was all small, medium, and large scale growers, milling their cane at the Big Bend Mill. Data were collected using validated and reliable questionnaires. Questionnaires were self-administered. Descriptive statistics of frequencies, percentages, means, and standard deviations were used to describe data. One way analysis of variance (ANOVA) and the independent t-test were used to test for significant differences at an a priori probability of  $p \leq 0.05$ . Correlation coefficients were used to describe relationships, and stepwise regression analysis was used to determine explanatory variables for sugar cane yield.

The findings indicated that large scale farmers were getting higher yields in tonnes cane per hectare than small and medium scale growers. However, sucrose percentage was higher with small scale than medium and large scale growers. Inputs and services were available, accessible, and affordable to all groups of sugar cane growers. Most of the sugar cane growers were within the recommended delays in implementing the crucial planting and post harvest operations; and the man-days used per activity per hectare were within standard. Small scale sugar cane growers were providing fewer opportunities for training their employees. Findings also indicated that small scale farmers had inadequate knowledge of the type of chemicals used and pre and post emergency applications. Explanatory variables for sugar cane yield were distance between the farm and the mill; hand application fertilizer man-days per hectare; and labor strength. Distance between the farm and the mill had a negative influence on sugar cane yield. Lack of training had a negative impact on sugar yield for medium scale farmers. Delays between seed cane cutting and first irrigation, age of farmer, and number of weeks between harvesting and second fertilizer application had a negative effect on sugar cane yield for large scale farmers. The research failed to reject the research hypothesis that good management and adequate inputs increases sugar cane yield. The main conclusion was that, those farmers who are furthest from the mill should consider replacing sugar cane production with other viable business ventures.

**Investigating the International Awareness of Students Meeting their International Dimension Requirement through Course Offerings in the College of Agriculture at Oklahoma State University**

**Samba Moriba**, Oklahoma State University

**M. Craig Edwards**, Oklahoma State University

Many U.S. universities are preparing their students and faculty to attain “international awareness.” The College of Agriculture (COA) at Oklahoma State University offers three international dimension (ID) undergraduate courses. However, it is not certain if students taking these courses are receiving learning experiences that are impacting their international awareness. The study’s purpose was to investigate attitudes regarding the international awareness of students enrolled in ID undergraduate courses during fall semester of 2010. The target population of the

study consists of all undergraduates (N = 147) enrolled in the ID undergraduate courses offered by the COA. Students had positive attitudes regarding international issues and the impact of internationalizing the curricula pre-course. Little or no difference existed in students' pre-course attitudes regarding international issues irrespective of the ID course in which they are enrolled. Post-course results were not known at this time, but those data will be collected at the end of the 2010 fall semester, analyzed, and compared to pre-course findings.

Comparing students' performances after their having completed the courses under study may reveal whether the ID courses being investigated meet the need for which they are intended. If U.S. universities internationalize their curricula adequately, graduates who participate in ID courses may experience a positive change in their attitudes about international issues and concerns. This increased level of international awareness could improve graduates productivity as global citizens and employees. Consequently, the United States would be positioned better to maintain its leadership role in the global economy and remain competitive and secure.

### **Examining the Barriers and Motivations Influencing Undergraduate Students' Choices to Participate in International Experiences: A Comparison of Two Universities**

**J. C. Bunch**, Oklahoma State University

**Alexa J. Lamm**, University of Florida

**Glenn D. Israel**, University of Florida

**M. Craig Edwards**, Oklahoma State University

Many institutions are attempting to meet the needs of international companies for employees who are globally competent. So, international learning experiences are becoming an increasingly important element of undergraduate education. This study's purpose was to assess the motivations and barriers influencing students' decisions regarding participation in international experiences (IEs). Students at two U.S. land-grant universities were studied (n = 342). By understanding student motivations and barriers, agricultural educators can more easily target students' behavioral, normative, and control beliefs thereby influencing their decisions to participate in IEs.

The barrier participants most strongly agreed kept them from engaging in IEs was the financial expense. The most important motivator for engaging in an international experience (IE) was the personal life experience they would receive. When participant responses from the two universities were compared, levels of previous participation in IEs were significantly different ( $p < .05$ ) before and during college. Additionally, participants had statistically different responses to the barriers they associated with IEs. Personal characteristics also influenced the barriers and motivators differently, with gender having a significant impact at one school and not the other. Moreover, the location in which participants grew up, suburban versus rural, influenced responses about barriers at one school but it had no impact on students at the other. When considering how to incentivize students to engage in IEs, agricultural educators should focus on the personal life experiences students could gain by participating. Agricultural educators should also try to find financial support for students to participate in IEs.

## **Feast or Famine: Students Learn about the Importance of Seed Identification Related to Climate Adaption for Sub-Saharan Africa**

**Lori Unruh Snyder**, Purdue University

**Sarah Cathey**, University of Florida

**Tracy Irani**, University of Florida

**Kenneth Quesenberry**, University of Florida

Individuals with non-agricultural backgrounds compose the majority of students interested in biology today. Most of these students fail to understand that a relatively small group of plant species compose the primary plants that supply almost all food for the world's population and what is needed in order to achieve a sustainable farming ecosystem. One approach to create interest in subject content is through games. Games have been examined in university classrooms since the 1950s. Moreover, game-based education has been utilized as an instructional tool across disciplines ranging from international relations to biology. Not only do game-based exercises offer the potential for student to learn more; they serve to reinforce the student understanding of new content and to aid student retention. The cognitive benefits for the student include fostering higher level of interest in content and creating a way to learn material with an approach that promotes critical thinking. The purpose of this study was to develop and evaluate an internet-based learning system to complement traditional crop science classes to promote awareness of global food adaption.

CROPVIEW (<http://www.purdue.edu/cropview/>) consists of four learning modules followed by a game module. The four learning modules are "Introductory Module" - overview of major groups of plants, plant nutrition, photosynthesis, and biome adaptation, "Nutrition Module" - how plants provide energy and protein for human nutritional needs, "Biome Module" - characteristics that delineate biomes and where they occur in the world; and "Seed Plant Module" - descriptive information and interactive images of 20 of the world's most important crops. The "Feast or Famine" game module evaluates identification and adaptation of the primary plants that feed our world. The game consists of scenarios with increasing difficulty where people groups are faced with natural disasters leading to possible food deficits. The game player is challenged to accept the mission to supply seeds that are adapted to the disaster biome and that will satisfy human nutritional needs. The game has three levels and reported herein are the results of the third level (most difficult level) that reflects student learning of seed and climate adaption for Sub-Saharan Africa within Ethiopia. Three universities were selected to test the game. The total student population (n=150) were surveyed with 129 respondents. The preliminary qualitative data indicated that students "enjoyed the challenge of applied learning of seed crop adaption" and "felt that it was a useful way to learn about where different plants grow best, while learning to help people not go hungry." As part of the game play, the students could consult experts for advice, and the most selected expert was the African farmer, followed by the climatologist. Seventy-three students selected sorghum as the top adapted crop followed by millet. Depending on the students' prior learning and awareness of famine issues and nutritional demands this game either culminated the need to learn more about the issues or created a desire to learn more about real-world food issues.

## **Constraints on the Adoption of Improved Sorghum Seed in Tanzania: A Value Chain Approach**

**J. Mark Erbaugh**, The Ohio State University  
**Salome Maseki**, Sokoine University of Agriculture  
**Fredy Kilima**, Sokoine University of Agriculture  
**Don Larson**, The Ohio State University

Increasing the adoption of improved crop varieties among smallholder farmers can contribute to agricultural productivity and growth in Sub-Saharan Africa. However there are many constraints along the value chain that impede the adoption of improved seed. In Tanzania, sorghum is an important cereal crop in semi-arid areas where the use of improved sorghum varieties remains low. The main purpose of this study was to examine value chain constraints that affect the adoption/utilization of improved sorghum seed in the Singida Region, Tanzania. A survey was conducted in northwestern Tanzania with 97 sorghum farmers randomly selected from 3 villages in Iramba district. None of the farmers surveyed reported using recently released improved varieties and 27% reported re-cycling older improved varieties. The main reasons farmers indicated for not using improved seed were low market value, lack of availability, and knowledge of benefits. The main constraint faced by seed breeders was reduced funding for sorghum breeding research. Seed certification efficiency was undermined by low staffing and responsibility for multiple crops. The main constraint faced by seed multipliers was weather variability that hampered improved seed multiplication and production. The main constraints indicated by seed companies and seed distributors were low demand for improved sorghum seed and poor transportation infrastructure. Discussions with extension agents indicated awareness of improved sorghum varieties but not of new market opportunities. Extension providers have an important role in promoting the adoption of improved seed by raising the awareness of benefits, the problems of using recycled seed, and information on new market opportunities.

## **Predictors of Knowledge-Sharing Behaviors among Community-Based Natural Resources Organizations in the Okavango Delta, Botswana**

**O. T. Thakadu**, University of Botswana  
**Tracy Irani**, University of Florida  
**Ricky Telg**, University of Florida

Communication of information about natural resources and the environment is becoming an essential component in all aspects of sustainable development. Information diffusion interventions have often relied on the use of agents to disseminate information to their constituents, mainly agricultural innovations. Research related to knowledge-sharing behaviors is scarce in environmental/natural resources communication literature, though it abounds in other disciplines, such as organizational management. There is, therefore, a need to explore knowledge-sharing behaviors in the field of environmental communication. This article presents research results conducted to examine the relative contribution of selected predictors of knowledge sharing behaviors in explaining knowledge-sharing among the community-based natural resources management (CBNRM) leaders in the Okavango Delta, Botswana. The study was guided by theory of reasoned action and responsible environmental behavior model framework. The constructs explored, drawn from the two theories; knowledge, beliefs, attitudes, locus of control and intentions, were used to conceptualize a research model. While the

responsible environmental behavior model posits knowledge to be a product of three knowledge domains, the study proposed an additional fourth knowledge domain: traditional ecological knowledge (TEK). TEK denotes socio-ecological knowledge, practices, and beliefs accumulated by communities over time through adaptive process and transmitted culturally across generations.

One hundred and twenty subjects, representing 13 CBNRM Boards, participated in the quasi-experimental study. Subjects completed a retrospective-pretest instrument after exposure to an experimental treatment – presentation of an environmental issue. Data was analyzed using multiple regression statistical procedures. Findings show that the three immediate predictors; knowledge, locus of control, and attitudes accounted for 46.3% of the variance in the knowledge sharing behavioral intention. Knowledge and attitude had an equal relative importance in the prediction of behavioral intention, with locus of control exerting the least influence. Among the four knowledge domains, skill knowledge has the strongest effect, followed by issue knowledge. The results indicate that attitudes towards knowledge sharing, knowledge of the subject matter, mainly factual and skills, have important effects in the promotion of knowledge sharing behaviors. Based on the findings, an effective information-diffusion intervention targeting agents should focus on promoting favorable attitudes and beliefs towards knowledge-sharing among agents, as well as focusing on equipping the agents with both factual and skill knowledge.

### **Knowledge Levels and Perceived Effect of Ecosystem Value Chain on Extension Delivery in South Africa**

**O. I. Oladele**, North-West University, Mafikeng Campus

The extension service, due to its large network of personnel, is in position to formulate a cohesive structure for promoting sustainable agriculture value chain. This is, however, dependent on the knowledge levels of Extension Officers which would provide important insight into predicting whether or not they would engage in programs that address sustainable agriculture value chain. A simple random sampling technique was used to select 80 extension officers to examine their knowledge levels and perceived effect of ecosystem value chain on extension delivery in North West Province, South Africa. Data were collected with a structured questionnaire and analyzed using frequency counts, percentages and multiple regression analysis. The results show that extension officers had a wide range of knowledge levels regarding ecosystem services such as provisioning, regulating, supporting, and cultural factors, as well as the valuation techniques for these services. Also, extension officers indicated that the ecosystem value chain will have high impact on extension delivery in terms of farmers requiring new skills (85%), and farmers needing specialized and privatized extension services (80%). Significant determinants of extension officers' knowledge levels were gender ( $t= 2.14$ ), age ( $t= 2.28$ ), educational level ( $t = -3.76$ ), studying for higher degree ( $t = 2.47$ ) and living in job location ( $t = -2.51$ ).

*Undergraduate Programs***Impact of Short-Term Study Abroad Programs in Colleges of Agriculture****Mark A. Brennan**, The Pennsylvania State University**Thomas H. Bruening**, The Pennsylvania State University**Bradley L. Olson**, The Pennsylvania State University**Glenn D. Israel**, University of Florida**Alexa J. Lamm**, University of Florida

An urgent need exists for graduates who possess both agricultural knowledge and international competency. This need is indicative of the challenges we face around the world. One of the UN's hunger by half. In light of 2015 deadline, the issue of global food security needs the attention of agricultural professionals now more than ever. Development organizations from both the private and government sectors are looking for the next generation of leaders who possess the characteristics needed to tackle agricultural issues in the 21<sup>st</sup> Century. Study abroad is one way of gaining international competency by spending time in a foreign country interacting with the local people and learning from their perspective. Short-term study abroad can facilitate such learning without sacrificing a significant amount of time. In terms of academic disciplines, agricultural students have the lowest level of participation, both in the United States and internationally. This study sought to identify the following: benefits and barriers to participation in study abroad programs; impact of short-term study abroad programs on students in terms of educational content and cultural awareness.

The study surveyed students enrolled in agricultural colleges from around the United States who had taken part in a short-term study abroad program. The quantitative survey measured students' attitudes and opinions and was distributed online through the website SurveyMonkey™. The findings suggest that experiential learning in international, agricultural settings helps foster students' cultural awareness and increase their knowledge of agriculture. Students tended to believe that studying abroad would enhance their marketability and make them more employable. A majority of students agreed that they had come to view other cultures in a more positive way and felt they had increased their own capabilities as a result of the experience. An overwhelming majority reported that they had learned new information about agriculture and that they learned better by seeing the concepts firsthand. Still, there was agreement that many students are intimidated by international studies and that departments do not do enough to promote these programs. Based on the findings, recommendations include better marketing and promotion of short-term study abroad programs as well as linking programs to professional development courses.

**Developing Strong International Agricultural Education Programs  
by Understanding Cognition**

**Alexa J. Lamm**, University of Florida  
**Amy Harder**, University of Florida  
**Tracy Irani**, University of Florida  
**T. Grady Roberts**, University of Florida  
**Lori Snyder**, Purdue University  
**Joel Brendemuhl**, University of Florida

International experiences provide culturally rich, complex situations for learners to process in both the affective and cognitive domains. By better understanding how learners process the information they receive, educators can develop quality programs that challenge learners. The purpose of this study was to explore the cognitive relationships among participants' learning styles, problem solving styles, and critical thinking dispositions in a study abroad setting. The relationships among the problem solving styles, learning styles, and critical thinking dispositions of students participating in a three week problem solving and experiential learning focused study abroad course were examined to gain an understanding of how the three relate. When learning style preferences were examined in comparison to the group average critical thinking scores those exhibiting an accommodating or converging learning style exhibited a high critical thinking disposition. Those exhibiting either an assimilating or diverging learning style exhibited a low critical thinking disposition. When learning style preferences were viewed in comparison to problem solving style individuals exhibiting a diverging learning style tended to have a low problem solving score (adaptor preference) while those with a converging learning style preference exhibited a high problem solving score (innovator preference). Individuals exhibiting accommodator or assimilator preferences had average problem solving scores, placing them in the center of the problem solving measurement scale. Relationships between problem solving style and critical thinking disposition were not found. A major practical implication from this study is study abroad instructors should expect students on international agricultural education trips to differ in terms of their cognitive processes and associated cognitive styles such as learning style. Instructors should be prepared to address these differences in style as they would in a traditional instructional setting. Further, cognitive assessment of critical thinking, learning style, and problem solving style should be utilized to help instructors understand the thinking and learning processes of students. Instructors can use assessment tools to group students to work together more effectively and/or to achieve diversity in their thinking styles and approaches to solving problems. Given this study was conducted in a single setting with a limited sample, further testing on these cognitive relationships in varied international settings and with diverse audiences such as adult learners should be done in order to make a stronger contribution to our understanding of cognitive processes activated by international experiences.

## **A Semiotic Analysis of Experiential Learning in an International Context Using Undergraduate Students' Reflective Photo-Journals**

**Melissa Mazurkewicz**, University of Florida

**Alexa J. Lamm**, University of Florida

**Tracy Irani**, University of Florida,

**T. Grady Roberts**, University of Florida

**Lori Snyder**, Purdue University

Higher education is increasingly including international experiences for students. Experiential learning is an important tool in both study abroad experiences as well as entrepreneurship education. Undergraduate students participating in a study abroad course in Latin America worked in groups to complete an experiential entrepreneurship project where they were asked to create and market two natural products. During the project, students completed a photo-journal as a reflection tool. The purpose of this study was to assess the most important aspects of the students' learning through a content analysis of their photo-journals and to determine the symbols found throughout the photographs using semiotics. The important themes emerging from the photos were hands-on learning and direct engagement with the production and selection of elements in creating natural products. Also, peer learning and group work were a focus of the photos. The majority of the participants included photos depicting intercultural interactions. The most common symbol found in the photos was students' hands forming a vector directing attention to the process of creating a natural product or the product itself. To help enhance student learning and engagement in international experience, opportunities for group work and peer learning should be provided. In addition, it is important to provide students with the opportunity to directly interact with the phenomena being studied. While intercultural engagement was present, it may be necessary to help enhance the intercultural interactions among students.

### ***Vocational Education***

#### **Explanatory and Predictor Variables for Sustainability of Self-Employability of Pre-Vocational Agriculture Graduates in Swaziland**

**Mpendulo L. Mngomezulu**, University of Swaziland

**Comfort Mndebele**, University of Swaziland

**Barnabas M. Dlamini**, University of Swaziland

The study was ex post facto and the purpose was to determine explanatory and predictor variables for sustainable self-employability of the pre-vocational agriculture high school graduates in Swaziland. The study was based on the hypothesis that availability of resources improves the self-employability of the pre-vocational agriculture graduates. The target population of the study was the pre-vocational agriculture high school graduates who graduated between 2003 and 2008 (N=494). A stratified random sample was used for the study (n=218). Data collection was triangulated by the NGT workshop and a questionnaire. The questionnaire was validated and reliability tested. Descriptive statistics of frequencies, percentages, means and standard deviations were used to describe data. One way analysis of variance (ANOVA) and the independent t-test were used to test for significant differences at an a priori probability of  $p \leq 0.05$ . Correlation coefficients were used to describe relationships and, stepwise regression

analysis was used to determine explanatory variables. The findings indicated that there was a significant relationship between the dependent variable and resources, attitude, aspirations and location of graduates. It was therefore recommended, that a follow-up and support to pre-vocational agriculture graduates be considered for sustainable self-employment. Furthermore, the school career guidance program must be strengthened to support career decision-making among prevocational agriculture graduates.

### **A Comprehensive Approach to Implementing Successful Internship Programs in Egyptian Agricultural Technical Schools**

**R. Kirby Barrick**, University of Florida  
**Mohamed M. Samy**, USAID MUCIA Value-Chain Training  
**Andrew C. Thoron**, University of Florida  
**T. Grady Roberts**, University of Florida  
**Brian E. Myers**, University of Florida  
**Michael A. Gunderson**, University of Florida

Since 2007, instructors in the agricultural technical schools (ATS) in Upper Egypt have been involved in a series of programs designed to prepare them to plan and conduct internships as a part of the school curriculum. Instructors have indicated the competencies they developed as a part of participating in workshops as well as competency areas in which they need further assistance. The programs were designed as part of a model that was developed to prepare a well-educated agricultural workforce, eventually improving the agricultural economy of Egypt and assist farmers and agribusinesses to be more successful. Instructors were also involved in a study that identified their concerns regarding the implementation of internships, and key personnel were interviewed to ascertain indicators of success. Generally, the implementation of internships has been successful. Instructors need more assistance in working with families and agribusinesses. Instructors have some concerns about implementing internships since they are not part of the required curriculum. Students, parents and agribusiness representatives were highly supportive of the internship program. The program should be expanded so that more students can participate, and additional workshops are needed to assist instructors who continue to have concerns about how to incorporate internships into their programs.

### **Educators' Perceptions of Job-Related Competencies Needed by Entry-Level International Development Agents**

**Tim Kock**, Louis Berger Group  
**William Weeks**, Oklahoma State University

According to the United States General Accounting Office (2003), since 1992 the United States Agency for International Development (USAID) staff has decreased substantially. As a result, USAID increased its reliance on contractor staff to manage its day-to-day overseas activities. This shift in staffing has pushed many non-governmental agencies (NGOs) to become involved in implementing aid-supported development. Recent college graduates with an interest in international agriculture and extension education fill these expanding job opportunities. Colleges and universities are charged with effectively designing curricula that enable students to acquire the needed competencies and better prepare individuals to live and work successfully in other cultures (Irigoien, Whitacre, Faulkner, & Coe, 2002).

The purpose of this study was to describe educators (AIAEE members) perceptions of job-related competencies for entry-level international development agents. Nine constructs were garnered from the research: conflict management and resolution, cultural diversity, management responsibility, personal and professional development, personal skills, program planning and evaluation, public relations, staff relations, and work habits. An online questionnaire was used to collect data and a 49% response rate was achieved. Educators rated all nine constructs as somewhat important or important. When asked to rank the constructs in order of importance, participants ranked program planning and evaluation as the most important followed by cultural diversity, and work habits. Only a weak correlational relationship was found for age and international work experience to the nine constructs. About half of the participants reported having taught an undergraduate or graduate course related to international development.

**Association for International Agricultural and Extension Education  
27<sup>th</sup> Annual Conference  
Professional Poster Presentations**

**The Mvule Project: Promoting Ecological Educational and Economic Advancement in Busoga, Uganda.** Ian K. Shelburne, & David E. Lawver

**Cell Phone Services in Africa: Use of Advertiser Supported PCM Messages for Agricultural Market and Extension Information.** David R. Walther, & David Lawver

**Developing and Implementing a Subscription Management System for Extension Clientele.** Pete Vergot, & Theresa Friday

**Trends and Perspectives of Subsistence Farmers in Timor Leste on the Use of Forest Products and Traditional Agriculture.** Austen Moore, Tom Dormody, & Dawn Van Leeuwen

**Broadening the Conversation: The International Agriculture Graduate Student Forum.** Dan Tobin, Kristal Jones, Jessica Bagdonis, Katy Barlow, & Thomas Bruening

**Serving Fresh Salads to Mojitos: Students' Experiential Learning of Local Markets and Hydroponics on Island Time.** Lori Unruh Snyder, Michael V. Mickelbart, & Val Eylands

**Reusable Learning Objects as a Delivery Strategy for Internationalizing Agricultural Curricula.** Rwei-Ping Chang, M'Randa Sandlin, Kim Dooley, & James Lindner

**Factors influencing choices of grazing lands made by livestock keepers in Enhlanokhombe in Ukhahlamba (Drakensberg), KwaZulu-Natal, South Africa.** Steven Worth, & Mphumzeni Chonco

**The Power of Context: Understanding Human Behaviors in Complex Global Settings.** Lauren Hrcirik, Nicole Stedman, & Amy Harder

**Thinking Globally, Acting Locally: Extension and the World.** Renee Pardello, & Greg Cuomo

**Curriculum Development for the Agricultural Vocational High Schools of Afghanistan: Building a Sustainable Future.** Jerry Peters, & Ryan Wynkoop

**Enhancing Faculty Capabilities to Address Food Security, Safety, Production, and Marketing in Trinidad and Tobago.** M'Randa R. Sandlin, James R. Lindner, Kim E. Dooley, David Dolly, & Wayne Ganpat

**Survey Says Identifying Research Capacities at the Universidad Nacional Agraria-La Molina.** Padon Holt, Ryan Collett, Samantha Alvis, Carmen Velezmoro Sanchez, Silvana Vargas Winstanley, Gary Wingenbach, Leonardo Lombardini, Manual Piña, Jr., & Gary Briers

**Using MOODLE to Bridge the Divide: Three Countries, Three Languages.** Esther Miller, Susan Jagendorf-Sobierajski, Guadalupe Patricia Revilla Pacheco, David Njite, & M. Craig Edwards

**Hungry Decisions: Using Second Life to Experience Global Conditions.** Tracy Rutherford, & Gary Wingenbach

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**Building More Effective Study Abroad Programs: Students Feedback from Programs to Brazil and Croatia.** Jill Victoria Tomlinson, & Wilmara Harder

**Internationalizing Agricultural Curriculum at Oklahoma State University (OSU).** Cindy Blackwell, M. Craig Edwards, D. Dwayne Cartmell II, Shelly Sitton, & J. Tanner Robertson

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**Using Faculty Study Abroad Programs to Improve Undergraduate Curriculum.** M'Randa R. Sandlin, James R. Lindner, & Kim E. Dooley

**Establishing a Fulbright Students and Scholars Association (FSSA) at Oklahoma State University: A Student-led Initiative.** Assoumane Alhassane Maiga, Shelly P. Sitton, M. Craig Edwards, D. Dwayne Cartmell, Cindy Blackwell, & Tanner Robertson

**Investment Assessment for Extension.** Magdalena Blum, Judit Szonyi, & John Preising

2011 AIAEE Conference

**Outstanding Paper Presentation**

*Transformative Learning Experiences Reported by Faculty Creating and Teaching  
Agricultural Sustainability for Study Abroad*

**Lori Unruh Snyder**, Purdue University  
**Alexa J. Lamm**, University of Florida  
**Joel Brendemuhl**, University of Florida  
**Tracy Irani**, University of Florida  
**T. Grady Roberts**, University of Florida  
**Mary T. Rodriquez**, University of Florida  
**Julia Navarro**, Purdue University

**Outstanding Paper Presentation – 1<sup>st</sup> Runner-up**

*Predictors of Knowledge-sharing Behaviors among Community-based Natural Resources  
Organizations in the Okavango Delta, Botswana*

**O. T. Thakadu**, University of Botswana, Maun  
**Tracy Irani**, University of Florida  
**Ricky Telg**, University of Florida

**Outstanding Paper Presentation – 2<sup>nd</sup> Runner-up**

*Communication Factors Affecting African Policymakers'  
Decisions about Agricultural Biotechnology*

**Belay Ejigu Begashaw**, The MDG Centre, East & Southern Africa  
**Gary J. Wingenbach**, Texas A&M University

**Outstanding Graduate Student Paper Presentation**

***Explanatory and Predictor Variables for Sustainability of Self-Employability of Pre-Vocational Agriculture Graduates in Swaziland***

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**Comfort Mndebele**, University of Swaziland  
**Barnabas M. Dlamini**, University of Swaziland

**Outstanding Graduate Student Paper Presentation – 1<sup>st</sup> Runner-up**

***An Analysis of the Agricultural Sustainability of Small-Scale Farms in Lacluta Sub-District of Timor Leste: A Comparison of Internal and External Perspectives***

**Austen Moore**, New Mexico State University  
**Tom Dormody**, New Mexico State University  
**Dawn Van Leeuwen**, New Mexico State University

**Outstanding Graduate Student Paper Presentation – 2nd Runner-up**

***Examining the Barriers and Motivations Influencing Undergraduate Students' Choices to Participate in International Experiences: A Comparison of Two Universities***

**J. C. Bunch**, Oklahoma State University  
**Alexa J. Lamm**, University of Florida  
**Glenn D. Israel**, University of Florida  
**M. Craig Edwards**, Oklahoma State University

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*Developing and Implementing a Subscription Management System for Extension Clientele*

**Pete Vergot**, University of Florida  
**Theresa Friday**, University of Florida

**Outstanding Poster Presentation – 1st Runner-up**

*Reusable Learning Objects as a Delivery Strategy for  
Internationalizing Agricultural Curricula*

**Ruei-Ping Chang**, Texas A&M University  
**M’Randa Sandlin**, Texas A&M University  
**Kim E. Dooley**, Texas A&M University  
**James R. Lindner**, Texas A&M University

**Outstanding Poster Presentation – 2nd Runner-up**

*Serving Fresh Salads to Mojitos: Students Experiential Learning of  
Local Markets and Hydroponics on Island Time*

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**Michael V. Mickelbart**, Purdue University  
**Val Eylands**, Blue Harbor Plantations Farms

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*The Mvule Project: Promoting Ecological, Educational,  
and Economic Advancement in Busoga, Uganda*

**Ian K. Shelburne**, Texas Tech University  
**David E. Lawver**, Texas Tech University

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*Cell Phone Services in Africa: Use of Advertiser Supported PCM Messages for Agricultural  
Market and Extension Information*

David R. Walther, Texas Tech University  
David Lawver, Texas Tech University

**Outstanding Graduate Student Poster Presentation – 2nd Runner-up**

*Trends and Perspectives of Subsistence Farmers in Timor Leste  
on the Use of Forest Products in Traditional Agriculture*

**Austen Moore**, New Mexico State University  
**Tom Dormody**, New Mexico State University  
**Dawn Van Leeuwen**, New Mexico State University

**Association for International Agricultural and Extension Education**  
**27<sup>th</sup> Annual Conference**  
**Windhoek, Namibia**  
**July 3-7, 2011**

**AIAEE Award Winners for 2011**

**Outstanding Leadership**

*Mark Erbaugh*  
Ohio State University

**Outstanding Service Award**

*Kim Dooley*  
Texas A&M University

**Outstanding Achievement Award**

*K.S.U. Jayaratne*  
North Carolina State University

**Outstanding Early Achievement Award**

*Timothy Kock*  
The Louis Berger Group

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**Journal Article of the Year for 2010**

The past editor requested review and nomination of articles published in Volume 17 (2010) for the 9th annual **Article of the Year Award**. Criteria for article selection and nomination were the article's capacity for "enhancing the *research* and *knowledge base* of agricultural and extension education worldwide." Following are the results of this evaluation. Congratulations to all the authors on their scholarly achievements.

**Outstanding Journal Article of the Year for 2010**

Erbaugh, J. M., Donnermeyer, J., Amujal, M., & Kidoido, M. (2010). Assessing the impact of farmer field school participation on IPM adoption in Uganda. *Journal of International Agricultural and Extension Education*, 17(3), 5-20.

**Runner-Up Journal Article of the Year for 2010**

Smith, D. B., Jayaratne, K. S. U., Moore, G., Kistler, M. J. & Smith, D. (2010). Factors affecting the global mindedness of extension agents: Implications for building global awareness of extension agents. *Journal of International Agricultural and Extension Education*, 17(1), 59-67.

### *Manuscript Submission Guidelines*

The *JIAEE* is the official refereed journal of the Association for International Agricultural and Extension Education (AIAEE).

#### **General Requirements**

**Microsoft Word** files only may be submitted. All manuscripts must indicate the type of article—Feature; Commentary; Tools of the Profession and Book Review—on the title page of the manuscript. **All manuscripts must be submitted online** at <http://jiaee.ft.expressacademic.org>. Manuscripts cannot be published or be under consideration for publication in another journal. The *Journal of International Agricultural and Extension Education (JIAEE)* follows the standards set forth in the *Publication Manual of the American Psychology Association* (6th ed.). Online manuscript submission guidelines are posted at <http://www.aiaee.org/guidelines.html>. **Authors must follow these formatting requirements** prior to submitting manuscripts to the *JIAEE*.

#### **Feature Articles**

A **title page** with manuscript title, authors' names, institutions, complete addresses, telephone and fax numbers, and e-mail addresses is required. The manuscript must include an **Abstract** (a succinct idea of the article's content) not exceeding 250 words, followed by 5-7 **Keywords** (selected from a list of topics available on the submission log on page), **Introduction, Theoretical/Conceptual/Operational Framework, Purpose and Objectives, Methods, Findings/Results, Conclusion, Recommendations/Implications, and References**, or similar appropriate headings. There is no fee charged for submitting a feature article. Feature Articles cannot be longer than **20 double-spaced** (12 point font) pages (not including the title page) with **one-inch margins** on all sides.

#### **Commentary Articles**

Commentary Article manuscripts are submitted online. A **title page** with manuscript title, authors' names, institutions, complete addresses, telephone and fax numbers, and e-mail addresses is required. The article must include an **Abstract** not exceeding 250 words. Please include 5-7 **Keywords** (selected from a list of topics available on the submission log on page) to describe your manuscript. Commentary Articles should be no longer than **eight double-spaced** (12 point font) pages (not including the title page) with **one-inch margins** on all sides.

#### **Tools of the Profession and Book Review Articles**

Tools of the Profession Article manuscripts are submitted online. A **title page** with manuscript title, authors' names, institutions, complete addresses, telephone and fax numbers, and e-mail addresses is required. Please include **Keywords** (about seven) to describe the manuscript. Tools of the Profession Articles should be no longer than **four double-spaced** (12 point font) pages (not including the title page) with **one-inch margins** on all sides. If you wish to submit a book review, policies and guidelines are available online <http://www.aiaee.org/files/BookRevGuide.pdf>.

#### **Page Fees**

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